



**TIER ONE:
DRAFT ENVIRONMENTAL
IMPACT STATEMENT**

Volume 1

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***Realignment of
Mountain Home
Air Force Base and
Proposed Expanded
Range Capability***

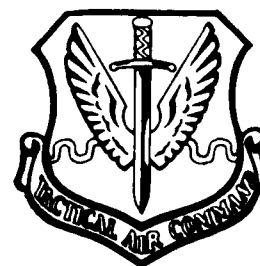
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U.S. AIR FORCE
Tactical Air Command



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DOCUMENT ORGANIZATION

This Tier 1 Draft Environmental Impact Statement (DEIS) addresses a realignment of aircraft and personnel at Mountain Home Air Force Base. This action will primarily affect environmental resources on the base and surrounding communities in Elmore County, Idaho. This Tier 1 DEIS also assesses the generic impacts of a proposed expanded range capability. This proposed action would primarily affect environmental resources in Owyhee County, Idaho. The difference in the land area and resources impacted by the realignment and proposed expanded range capability is a primary reason for the division of chapters 3 through 5 into chapters M3 through M5 and S3 through S5. This division was done at the request of the Bureau of Land Management to accommodate their information needs.

A Tier 2 EIS process would be implemented to assess site-specific impacts if a decision is made to pursue a proposed expanded range capability. However, all potential environmental impacts of the realignment of Mountain Home Air Force Base are assessed in this Tier 1 DEIS. The Tier 2 EIS would not contain any further environmental impact analysis of the realignment.

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|------------|---|
| Chapter 1 | PURPOSE OF AND NEED FOR THE ACTIONS, sets the stage for this DEIS, and is contained in both volumes 1 and 2. |
| Chapter 2 | DESCRIPTION OF THE ACTIONS AND ALTERNATIVES, presents a detailed discussion of the Air Force actions and any viable alternatives, and is contained in both volumes 1 and 2. |
| Chapter M3 | AFFECTED ENVIRONMENT: MOUNTAIN HOME AIR FORCE BASE REALIGNMENT, discusses the environmental and socioeconomic baseline conditions, and is presented in Volume 1 only. |
| Chapter M4 | ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES: MOUNTAIN HOME AIR FORCE BASE REALIGNMENT, covers the potential impacts of the action and proposed means of mitigating those impacts, and is contained in Volume 1 only. |
| Chapter M5 | UNAVOIDABLE IMPACTS: MOUNTAIN HOME AIR FORCE BASE REALIGNMENT, discusses the unavoidable impacts resulting from the action, and is presented in Volume 1 only. |
| Chapter S3 | AFFECTED ENVIRONMENT: PROPOSED EXPANDED RANGE CAPABILITY, discusses the environmental and socioeconomic baseline conditions, and is contained in Volume 2 only. |
| Chapter S4 | ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES: PROPOSED EXPANDED RANGE CAPABILITY, covers the potential impacts of the proposed action and proposed means of mitigating those impacts, and is presented in Volume 2 only. |
| Chapter S5 | UNAVOIDABLE IMPACTS: PROPOSED EXPANDED RANGE CAPABILITY, discusses the unavoidable impacts resulting from the proposed action, and is contained in Volume 2 only. |
| Chapter 6 | CUMULATIVE IMPACTS, evaluates the realignment and proposed expanded range capability and other major actions, ongoing or proposed for the near future, which could impact the same area or resources, and is contained in both volumes 1 and 2. |

An Acronyms and Abbreviations list is provided immediately following the Table of Contents.

COVER SHEET

Draft Environmental Impact Statement Realignment of Mountain Home Air Force Base and Proposed Expanded Range Capability

Responsible Agency: United States Air Force

Action: In response to the recommendations of the Defense Secretary's Commission on Base Realignments and Closures and the requirements set forth in the Base Closure and Realignment Act (Public Law 100-526), George Air Force Base is to be closed. Aircraft, materials, and personnel now at George AFB will be moved. Mountain Home AFB (MHAFB), Idaho was selected to receive the majority of the George AFB assets.

Contact for Further Information: Mr. Alton Chavis
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Designation: Draft Environmental Impact Statement (DEIS)

Abstract: This DEIS assesses the potential environmental impacts of the realignment of 94 F-4E and G aircraft and associated personnel from George AFB to MHAFB and removal of 35 F-111A aircraft from MHAFB. This statement also addresses, at a programmatic level, the potential impacts of expanding range capability to accommodate the increased training requirements of MHAFB and other Air Force units. Site-specific analyses for a second EIS would be conducted to evaluate alternatives for determining the exact location and boundaries for a proposed expanded range capability.

All impacts of the realignment are addressed in this DEIS.

Comments on this DEIS should be addressed to Mr. Chavis at the address noted above. The comment period ends on 16 April 1990. Comments must be postmarked by 16 April 1990. Public hearings will be held on this DEIS. Notice of these hearings will appear in the local media. Mr. Chavis can also be contacted for information on this meeting.

**TIER ONE:
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**Volume 1
Realignment of Mountain Home Air Force Base
and Proposed Expanded Range Capability**

February 1990

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EXECUTIVE SUMMARY

This EIS is prepared in accordance with Air Force regulations, the National Environmental Policy Act (NEPA), and the President's Council on Environmental Quality (CEQ) guidelines to assess the combined impacts of the Mountain Home Air Force Base (MHAFB) realignment and a proposed expanded range capability.

This EIS is the beginning or Tier 1 of an environmental analysis process that addresses the specific impacts to MHAFB and its environs. This Tier 1 EIS, in addition to evaluating the specific impacts of the MHAFB realignment actions, identifies and evaluates in general terms the potential expansion of range capability in southwestern Idaho and any reasonable alternatives available to meet training requirements. Air Force short-term, intermediate, and long-term training requirements are also identified in this Tier 1 EIS. Tier 1 will contribute to the decision to either proceed further with detailed studies and analysis for a range capability expansion in southwestern Idaho, or to select other alternatives. This Tier 1 EIS provides the initial framework (operational requirements, range development criteria, environmental attributes for the area, and description of environmental impacts associated with ranges) for use in a subsequent Tier 2 EIS if the decision is made to pursue a range expansion option.

This Tier 1 EIS will be completed in June 1990, and will conclude with a Record of Decision (ROD). The ROD will include decisions regarding the impacts of (1) relocating the 94 F-4E/G aircraft from George AFB; (2) removing the F-111 aircraft from MHAFB; (3) proposed modifications to special use airspace; (4) a proposal to allow supersonic operations above 5,000 feet AGL in Idaho special use airspace; and (5) whether to proceed further with ongoing studies to expand range capability in southwestern Idaho. The Air Force is currently participating in a citizen/government working group being facilitated by the Bureau of Land Management (BLM) to help ensure that all public concerns regarding the proposed expansion of range capability are addressed. The working group process will be conducted in parallel to Tier 1 and will develop proposals and alternatives to be evaluated in Tier 2 to meet short, intermediate, and long-term Air Force requirements.

The Tier 2 EIS is currently scheduled to begin in the spring of 1990 to evaluate alternatives for determining the exact size and location of an expanded range capability. Tier 2 would be a complete NEPA process for an EIS. It would include a Notice of Intent, public scoping meetings, public hearing and comment on a Draft EIS, and filing of a Draft and Final EIS with the Environmental Protection Agency (EPA), followed by a ROD. The subjects evaluated in Tier 2 will evolve through the NEPA process, including scoping meetings. This tiered approach permits

evaluation of the environmental impacts associated with the proposed expanded range capability at each phase of the planning process.

The MHAFB realignment is a result of the recommendations of the Defense Secretary's Commission on Base Realignment and Closure and legislative requirements in the Base Closure and Realignment Act (Public Law 100-526). This action, designed to improve efficiency in the Department of Defense, resulted in a series of base and facility closings and realignments. The MHAFB realignment results in increased activity at MHAFB and increased demand for use of the Saylor Creek Range (SCR) and associated airspace. The realignment will add 94 F-4E and G aircraft and transfer out 35 F-111A aircraft for a net increase of 59 aircraft at MHAFB. EF-111A aircraft currently based at MHAFB will not be moved. Realignment will result in a net increase of approximately 2,000 to MHAFB's current 4,250 personnel. The proposed expanded range capability would meet the expanded training requirements and improve training efficiency for the expanded MHAFB and for other missions. Volume II of this EIS examines at a programmatic level the proposed expanded range capability, proposed changes to special use airspace, the increased use of low-level military training routes, and proposed supersonic maneuvers at altitudes higher than 5,000 feet above ground level.

For MHAFB, the existing environment consists of a base-oriented supportive community, the city of Mountain Home, and a sparsely populated area of southern Idaho. The city of Mountain Home (population 8,900) is located in Elmore County (population 23,500), an agricultural and government-employee-based county in southern Idaho. Residents praise the relatively mild climate, low cost of living, low crime rate, and access to recreation when describing what they value in their community.

The study area evaluated for a proposed expanded range capability includes parts of Elmore County, but is chiefly in Owyhee County (population 8,400). The local residents are principally dependent upon ranching and agriculture. The rural natural environment has been impacted by grazing but remains relatively undisturbed by people. It is an environment where observant visitors may become aware of an inquisitive pronghorn scrutinizing their every move. It also is an area where Air Force aircraft on training missions have been part of the existing environment for many years.

Table M-1 summarizes the resources addressed as a result of public input during scoping, impacts by resource, and potential mitigations for the MHAFB realignment. Impacts on the city of Mountain Home will result from increased population and community expansion. In most cases, the negative impacts can be mitigated through proper planning, improvements in needed services, and coordinated efforts among local, state, and federal agencies.

Table S-1 summarizes the corresponding information for a proposed expanded range capability. The impacts of this proposed action were assessed at a programmatic level of analysis. Though many of these impacts were evaluated as potentially significant, the level of impact will be better defined in site-specific analyses performed for Tier 2.

The primary impacts of an expanded range capability result from aircraft overflights, land withdrawal, and ground disturbance. These impacts include fires and other ground disturbances associated with ordnance delivery, displaced economic activities, sonic booms from high altitude maneuvering, and low-level training flights in sensitive areas. Avoidance of identified sensitive areas can reduce the direct overflight impacts.

However, as Table S-1 demonstrates, there will be substantial difficulty in formulating a package of mitigations that will be acceptable to all involved parties. As part of this programmatic level EIS, decisionmakers will evaluate the needs of different involved parties and seek to balance the use and protection of southwestern Idaho's natural and human environment.

Decisionmakers at the local, state, federal, and other levels will need to coordinate their efforts to define how best to meet and resolve potential conflicts. At the heart of the issue is the future of Air Force operations in Idaho into the 21st century. Limited funds and potential reductions in DOD resources will affect future decisions. There presently exists, and there will be in the future, an acute need for cost-effective training areas that permit the use of today's aircraft and can be adapted to tomorrow's. Over the next decade, limited Air Force resources must be channeled to where adaptability and efficiency can be supported by local communities and the surrounding region. The proposed expanded range capability, combined with continued positive relationships among local residents, BLM, the Air Force, and others, has the potential to make MHAFB one of the most valuable assets in the Air Force inventory. This Tier 1 EIS is one tool designed to contribute to the decisionmaking process. The decisions will not be easy and cannot be unilateral.

Table M-1

**SUMMARY OF MOUNTAIN HOME AIR FORCE BASE REALIGNMENT
POTENTIAL IMPACTS AND MITIGATIONS**

(page 1 of 5)

<i>Potential Impact</i>	<i>Evaluation of Significance</i>	<i>Potential Mitigations</i>
AIRSPACE MANAGEMENT		
o Increased military air traffic in MHAFFB vicinity.	Moderate but insignificant impact.	None required.
o Congested terminal area airspace.	Potentially significant impact.	Upgrade MHAFFB air traffic control capability. Establish new approach and departure procedures between MHAFFB and Salt Lake City Air Route Traffic Control Center.
AIR RESOURCES		
o Increase in aircraft emissions.	Moderate but insignificant impact.	None required.
o Fugitive dust from construction activities.	Moderate but insignificant impact.	Use water for dust suppression. Minimize time period that newly graded sites are exposed.
NOISE		
o Increase in day and night air operations.	Moderate but insignificant impact.	None required.
BIOLOGICAL RESOURCES		
o Construction activities		
- On base	No significant impact.	None required.
- Off base	Moderate but insignificant impact.	Survey off-base construction sites for presence of habitats suitable for threatened and endangered species. Comply with Endangered Species Act. Avoid wetlands and riparian habitats.

Table M-1

**SUMMARY OF MOUNTAIN HOME AIR FORCE BASE REALIGNMENT
POTENTIAL IMPACTS AND MITIGATIONS**

(page 2 of 5)

<i>Potential Impact</i>	<i>Evaluation of Significance</i>	<i>Potential Mitigations</i>
o Increased aircraft operations.	Potentially significant impact.	Monitor raptor nest sites and population along runway flight paths. Work with BLM to mitigate significant effects. Analyze bird-aircraft strike data. Work with BLM to modify significant effects.
o Population increase.	Potentially significant impact.	Provide information to realignment-related personnel regarding Idaho game laws and BLM seasonal restrictions on recreation. Coordinate MHAFB recreational program with BLM monitoring program for recreational effects on biological resources.
CULTURAL RESOURCES		
o Construction activities.		
- On base	Moderate but insignificant impact.	Develop Programmatic Agreement (PA) and Management Plan outlining procedures for handling/documenting cultural resources.
- Off base	Potentially significant impact.	Mitigation procedures in PA and management plan will mitigate impacts.
o Increased population.	Potentially significant impact.	Develop educational information for MHAFB realignment-related personnel regarding cultural resources. Monitor recreational effects on cultural resources.
VISUAL RESOURCES		
o On-base construction.	No significant impact.	None required.
o Increased flight activity.	No significant impact.	None required.

Table M-1

**SUMMARY OF MOUNTAIN HOME AIR FORCE BASE REALIGNMENT
POTENTIAL IMPACTS AND MITIGATIONS**

(page 3 of 5)

<i>Potential Impact</i>	<i>Evaluation of Significance</i>	<i>Potential Mitigations</i>
o Off-base construction.	Moderate but insignificant impact.	Encourage rehabilitation of historic structures. Encourage residential or commercial expansion consistent with city of Mountain Home Land Use Plan, particularly on urban design portion of the plan.
EARTH RESOURCES		
o Construction activity effects on topography and soils.	Moderate but insignificant impact.	Minimize size of areas distributed by construction. Stockpile and protect soils that have been displaced. Landscape and revegetate disturbed areas.
o Increased population effects on cave and paleontological resources.	Potentially significant impact.	Identify resources susceptible to impacts. Limit access to and monitor known resources. Educate public to the value of resources. Work with BLM and other state and federal agencies to reduce adverse effects.
LAND USE		
o Increased flight activity.	Moderate but insignificant impact.	None required.
o Increased population effects on residential and recreation resources.		
- Urban land	Moderate but insignificant impact.	Encourage dispersal of residential development in city of Mountain Home and vicinity. Work with Elmore County Impact Steering Committee and local government officials in planning for possible park expansion.

Table M-1

**SUMMARY OF MOUNTAIN HOME AIR FORCE BASE REALIGNMENT
POTENTIAL IMPACTS AND MITIGATIONS**

(page 4 of 5)

<i>Potential Impact</i>	<i>Evaluation of Significance</i>	<i>Potential Mitigations</i>
<ul style="list-style-type: none"> - Rural/wilderness land 	Potentially significant impact.	<p>Coordinate MHAFB excursion programs with land use management agencies to minimize impacts on overused recreation resources.</p> <p>Conduct periodic education programs to promote safe and appropriate use of ORVs.</p>
TRANSPORTATION		
<ul style="list-style-type: none"> o Increased traffic. 	Moderate but insignificant impact.	<p>Retime signal at intersection of I-84B and SH67 for peak hours.</p> <p>Stagger MHAFB working hours to decrease peak-hour traffic.</p> <p>Support intersection improvement and underpass replacement program.</p>
SOCIOECONOMICS		
<ul style="list-style-type: none"> o Increased population effects 		
<ul style="list-style-type: none"> - Housing 	Potentially significant impact.	<p>Implement development of on-base housing.</p> <p>Pursue development of section 801 housing in city of Mountain Home and vicinity.</p> <p>Encourage development of new or rehabilitation of existing housing.</p>
<ul style="list-style-type: none"> - Education 	Potentially significant impact.	<p>Work with Elmore County Impact Steering Committee and local government officials to conduct further analysis to determine more precisely facility and personnel needs, including possible financial needs.</p>
<ul style="list-style-type: none"> - Community facilities and services 	Potentially significant impact.	<p>Work with Elmore County Impact Steering Committee and local government officials to identify solutions to community facility and service needs, including those for police and fire protection.</p>

Table M-1

**SUMMARY OF MOUNTAIN HOME AIR FORCE BASE REALIGNMENT
POTENTIAL IMPACTS AND MITIGATIONS**

(page 5 of 5)

<i>Potential Impact</i>	<i>Evaluation of Significance</i>	<i>Potential Mitigations</i>
WATER RESOURCES		
o Increased population-generated demand.	No significant impact.	None required.
SAFETY		
o Increased flight operations		
- Fire/mishaps	Potentially significant impact.	Assign additional equipment to flightline and crash safety. Increase disaster response training for potential mishaps.
- Bird strikes	Moderate but insignificant impact.	Follow BASH plan and related procedures to minimize bird-strike potential.
- Hazardous materials	No significant impact.	None required.
o Construction activity		
- Asbestos	No significant impact.	None required.
o Increased on-base population		
- New housing	Potentially significant impact.	Consider an additional fire house and the acquisition of additional equipment and personnel.

Table S-1

**SUMMARY OF PROPOSED EXPANDED RANGE CAPABILITY
POTENTIAL IMPACTS AND MITIGATIONS**

(page 1 of 6)

<i>Potential Impact</i>	<i>Evaluation of Significance</i>	<i>Potential Mitigations</i>
AIRSPACE MANAGEMENT		
o Potential conflicts with general aviation due to increased military flight operations.	Moderate but insignificant impact.	<p>Coordinate with FAA and Salt Lake City Air Route Traffic Control Center for additional MOA and ATCAA airspace.</p> <p>Disseminate scheduled military activity in special use airspace to civil pilots in area.</p> <p>Coordinate release of unscheduled MOA and restricted airspace back to civil ATC control.</p> <p>Upgrade radar coverage in special use airspace.</p> <p>Avoid public use airports in vicinity by 3 NM or 1,500 feet AGL. Note airports in military aeronautical charts and FLIP.</p>
AIR RESOURCES		
o Fugitive dust from construction.	Moderate but insignificant impact.	Use water for dust suppression.
o Fugitive dust from operations.	Potentially significant impact.	<p>Use soil stabilizers or wetting agents on firebreaks. Establish windbreaks.</p> <p>Use gravel or wetting agents on parking areas.</p>
o Plume blight from aircraft.	Potentially significant impact.	Avoid Jarbidge Wilderness Area.
NOISE		
<i>Subsonic</i>		
o Increased noise level, startle effect.	Potentially significant impact.	Minimize or avoid overflight of sensitive receptors through horizontal and vertical separation.
<i>Supersonic</i>		
o Overpressure, startle effect.	Potentially significant impact.	Minimize or avoid overflight of sensitive receptors through horizontal and vertical separation.

Table S-1

**SUMMARY OF PROPOSED EXPANDED RANGE CAPABILITY
POTENTIAL IMPACTS AND MITIGATIONS**

(page 2 of 6)

<i>Potential Impact</i>	<i>Evaluation of Significance</i>	<i>Potential Mitigations</i>
BIOLOGICAL RESOURCES		
<i>Vegetation</i>		
o Removal of vegetation.	Potentially significant impact.	Restrict grazing to restore habitat value in exclusive use areas.
o Intrusion of non-native species in disturbed areas.	Potentially significant impact.	Seed with native species. Monitor composition of plant communities. Work with BLM to minimize adverse impacts.
o Fires from live ordnance and flares.	Potentially significant impact.	Minimize live ordnance use.
<i>Wildlife (especially mule deer, pronghorn, bighorn sheep)</i>		
o Loss of habitat.	Potentially significant impact.	Conduct site-specific surveys. Locate targets and other range facilities away from sensitive areas. Work with BLM and state and local governments to mitigate impacts.
o Startle response.	Potentially significant impact.	Site targets away from canyons. Limit low-altitude flights over canyons.
o Fire hazard.	Potentially significant impact.	Limit the use of live ordnance and flares.
<i>Birds (especially raptors)</i>		
o Increased human presence.	Potentially significant impact.	Identify and avoid nest sites. Plan construction sites to avoid sensitive habitat.
o Startle response and bird-aircraft strikes.	Potentially significant impact.	Minimize low-altitude flights over canyons.

Table S-1

**SUMMARY OF PROPOSED EXPANDED RANGE CAPABILITY
POTENTIAL IMPACTS AND MITIGATIONS**

(page 3 of 6)

<i>Potential Impact</i>	<i>Evaluation of Significance</i>	<i>Potential Mitigations</i>
CULTURAL RESOURCES		
<i>Archaeological, Historical, and Architectural</i>		
o Construction activities and use of ordnance.	Potentially significant impact.	Develop a Programmatic Agreement and Management Plan. Conduct site-specific Class II and III surveys.
o Increased access leading to vandalism.	Potentially significant impact.	Restrict access and monitor resources.
o Overflight vibration to historic structures.	Moderate but insignificant impact.	Identify any historic structures. Minimize impacts through avoidance.
<i>Native Americans</i>		
o Disturbance to sacred sites.	Potentially significant impact.	Consultation with Native Americans to avoid sites.
o Noise intrusion on sacred ceremonies.	Potentially significant impact.	Limit overflights and coordinate in regard to ceremonies.
VISUAL RESOURCES		
o Construction of facilities in Visual Resource Management Class II areas.	Moderate but insignificant impact.	Avoid construction of range facilities in Owyhee and Bruneau/Jarbridge canyon systems and Wilderness Study Areas in ROI. Work with BLM to mitigate impacts.
o Aircraft overflight activities.	Potentially significant impact.	Limit flights along long axis of sensitive areas within MOAs (e.g., river canyons). Maintain maximum feasible horizontal or vertical separation from sensitive receptors along MTRs.

Table S-1

**SUMMARY OF PROPOSED EXPANDED RANGE CAPABILITY
POTENTIAL IMPACTS AND MITIGATIONS**

(page 4 of 6)

<i>Potential Impact</i>	<i>Evaluation of Significance</i>	<i>Potential Mitigations</i>
EARTH RESOURCES		
o Restricted access to areas of interest to geologists and miners.	Potentially significant impact.	Conduct mineral resources survey in study area. Coordinate with BLM and other agencies to provide maximum feasible access.
o Disturbance to soils and potential for erosion.	Moderate but insignificant impact.	Identify and avoid areas with high potential for erosion (e.g., steep slopes). Prepare dust control and erosion plan. Minimize size of disturbed area associated with construction sites. Surface heavily used roads and parking areas (e.g., gravel).
o Increased access to caves and paleontological sites.	Potentially significant impact.	Identify resources susceptible to impacts. Avoid construction in areas of high potential. Mitigate site disturbance if avoidance not possible. Limit access to and monitor known resources. Educate public to value of resources.
LAND USE		
o Reduction in private land ownership or restricting access to grazing and water allotments.	Potentially significant impact.	Compensate private land owners. Minimize the development of exclusive use areas on private land. Work with BLM to minimize impacts.
o Aircraft overflights of recreation areas, especially primitive recreation areas.	Potentially significant impact.	Minimize low-level flights over sensitive recreation areas. Curtail low-level flights during specified times of the year when recreational activities increase (e.g., whitewater boating in the spring). Work with concerned agencies -- federal and state -- to minimize impacts.

Table S-1

**SUMMARY OF PROPOSED EXPANDED RANGE CAPABILITY
POTENTIAL IMPACTS AND MITIGATIONS**

(page 5 of 6)

<i>Potential Impact</i>	<i>Evaluation of Significance</i>	<i>Potential Mitigations</i>
TRANSPORTATION		
o Potential changes to road network.	No significant impact.	None required.
o Increase in traffic in area.	No significant impact.	None required.
SOCIOECONOMICS		
o Land withdrawal effect on livestock grazing and mining activities.	Potentially significant impact.	Allow continued access to grazing, mining, and water rights. Compensate for loss of grazing, mining, and water rights on public lands. Minimize acquisition of private lands.
o Land withdrawal effect on Owyhee County revenues.	Potentially significant impact.	Minimize acquisition of private land where possible.
o Economic impacts of overflights.	Moderate but insignificant impact.	Coordinate training activities with recreational use patterns and monitor noise complaints to identify sensitive receptors.
WATER RESOURCES		
o Restriction of access to water rights.	Potentially significant impact.	Negotiate with individual users to protect access to existing water rights. Minimize limitations on access to water rights.
SAFETY		
<i>Flight Risks</i>		
o Increased flight operations would increase the risks associated with bird strikes and the potential for mishaps.	Moderate but insignificant impact.	Follow BASH procedures. Increase disaster response training requirements.

Table S-1

**SUMMARY OF PROPOSED EXPANDED RANGE CAPABILITY
POTENTIAL IMPACTS AND MITIGATIONS**

(page 6 of 6)

<i>Potential Impact</i>	<i>Evaluation of Significance</i>	<i>Potential Mitigations</i>
<i>Aircraft Malfunctions</i>		
o Hung ordnance.	No significant impact.	None required.
<i>Fire</i>		
o Wildfires from ordnance.	Potentially significant impact.	Limit use of live ordnance. Expand fire detection capability. Increase fire prevention and suppression capability.
o Intrusion by more flammable vegetation.	Potentially significant impact.	Reseed with native species.
<i>Hazardous Materials</i>		
o Increased use of ordnance.	No significant impact.	None required.
o Increased fuels and lubricants for equipment.	No significant impact.	None required.

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Acronyms and Abbreviations

AAA	Antiaircraft Artillery	CSEL	C-weighted sound exposure level
ACBM	asbestos-containing building materials	CZ	Clear Zone
ACEC	Areas of Critical Environmental Concern	DACT	dissimilar air combat training
ACHP	Advisory Council on Historic Preservation	DAR	defense access roads
ACM	Air Combat Maneuvers	dB	decibel
ACMI	Air Combat Maneuvering Instrumentation	DEIS	Draft Environmental Impact Statement
ACT	Air-to-Air Combat Training	DOD	Department of Defense
ADA	Average Daily Attendance	DOI	Department of the Interior
ADT	average daily traffic	DOPAA	Description of Proposed Action and Alternatives
AFB	Air Force Base	DOT	Department of Transportation
AFFIRMS	Automated Forest Fire Information Retrieval Management System	ECISC	Elmore County Impact Steering Committee
AFR	Air Force Regulation	ECM	Electronic Counter-Measures
AGE	Aerospace Ground Equipment	ECS	Electronic Combat Squadron
AGL	above ground level	EDA	Economic Development Administration
AGM	air-to-ground missile	EIS	environmental impact statement
AHC	aircraft handling characteristics	EOP	Explosive Ordnance Disposal
AICUZ	Air Installation Compatible Use Zone	EPA	U.S. Environmental Protection Agency
ALC	Air Logistics Center	EW	electronic warfare
ALCM	air-launched cruise missile	EWO	electronic weapons officer
APZ	Accident Potential Zone	FAA	Federal Aviation Administration
AQAM	Air Quality Assessment Model	FCF	functional check flight
ARTCC	air route traffic control center	FEBA	Forward Edge of Battle Area
ASP	ammunition storage point	FEIA	Federal Education Impact Aid
ASR	airport surveillance radar	FEIS	final environmental impact statement
ATIS	automatic terminal information service	FIA	fiscal impact assessment
ATV	all-terrain vehicle	FL	flight level
AUM	animal unit month	FLIP	Flight Information Publication
BAI	Battlefield Air Interdiction	FLPMA	Federal Land Policy and Management Act
BASH	bird-aircraft strike hazard	FMZ	Fire Management Zone
BFM	basic fighter maneuvers	FmHA	Farmers Home Administration
BIA	Bureau of Indian Affairs	FTU	Formal Training Unit
BLM	Bureau of Land Management	gpm	gallons per minute
BOPA	Birds of Prey Area	HMA	housing market area
B.P.	before present	HUD	Housing and Urban Development
BRA	Bruneau Research Area	Hz	Hertz
CAS	Close Air Support	IANG	Idaho Air National Guard
CERCLA	Comprehensive Environmental Responses, Compensation, and Liability Act	IAQB	Idaho Air Quality Bureau
CEQ	Council on Environmental Quality	IBHW	Idaho Board of Health and Welfare
CFR	Code of Federal Regulations	IDFG	Idaho Department of Fish and Game
cfs	cubic feet per second	IDOT	Idaho Department of Transportation
CFT	composite force training	IDWR	Idaho Department of Water Resources
CHABA	Committee on Hearing, Bioacoustics, and Biomechanics	IFR	Instrument Flight Rules
CRMP	Cultural Resource Management Plan	IRP	Installation Restoration Program
		JRA	Jarbridge Research Area
		KGRA	Known Geothermal Resource Area

KTAS	knots true airspeed	RCO	range control officer
LADL	low-altitude drogue delivery	RCRA	Resource Conservation and Recovery Act
LCR	local contribution rate	RHC	reactive hydrocarbons
LC _{dn}	day-night average C-weighted sound level	RIMS II	Regional Input/Output Modeling System II
L _{dn}	day-night average sound level	RIS	Range Instrumentation System
LOS	level of service	RMP	Resource Management Plan
LTRA	long-term response action	ROI	region of influence
LTO	landing and take-off	ROD	record of decision
MATES	mobilization and training equipment site	RTU	replacement training unit
MDS	Mission Debriefing System	SAC	Strategic Air Command
MFH	Military Family Housing	SAM	Surface-to-Air Missile
mg	million gallons	SARA	Superfund Amendments and Reauthorization Act
mgd	million gallons per day	SCR	Saylor Creek Range
MHAFB	Mountain Home Air Force Base	SEL	sound exposure level
MOA	Military Operations Area	SHPO	State Historic Preservation Office
MPRC	multipurpose range complex	SNRA	Sawtooth National Recreational Area
MSL	mean sea level	SOA	supersonic operations area
MTR	Military Training Route	SOF	supervisor of flying
NAAQS	National Ambient Air Quality Standards	SRMA	Special Recreation Management Area
NDEP	Nevada Division of Environmental Protection	TAC	Tactical Air Command
NDOW	Nevada Department of Wildlife	TFW	Tactical Fighter Wing
NEPA	National Environmental Policy Act	TFTW	Tactical Fighter Training Wing
NM	nautical mile	TFTS	Tactical Fighter Training Squadron
NOI	Notice of Intent	TFWC	Tactical Fighter Weapons Center
NPL	National Priorities List	TO	Touch and Go
NRHP	National Register of Historic Places	THC	total hydrocarbons
NWF	National Wildlife Refuge	TOSS	Television Ordnance Scoring System
NZ	noise zone	TSP	total suspended particulates
O&M	operations and maintenance	UBAQ	Utah Bureau of Air Quality
ODEQ	Oregon Department of Environmental Quality	UBC	Uniform Building Code
OEA	Office of Economic Adjustment	USACE	U.S. Army Corps of Engineers
ORA	Owyhee Research Area	USAF	U.S. Air Force
ORV	off-road vehicle	USFWS	U.S. Fish and Wildlife Service
OSHA	Occupational Health and Safety Act	USFS	U.S. Forest Service
OTA	Orchard Training Area	USGS	U.S. Geologic Survey
PA	programmatic agreement	UST	underground storage tanks
PFT	programmed flying training	UTTR	Utah Test and Training Range
PILT	payments in lieu of taxes	VFR	Visual Flight Rules
PLO	Public Land Orders	VQO	Visual Quality Objectives
ppm	parts per million	VRM	Visual Resource Management
psf	pounds per square foot	VMS	Visual Management System
RA	Resource Area	WSA	Wilderness Study Area
RAPCON	Radar Approach Control	WSO	weapon systems officer
RCAG	remote communications air/ground		

FOREWORD

Recently, the Air Force met with a number of Idaho residents to discuss the proposal for an expanded range capability. This included scoping meetings in accordance with the National Environmental Policy Act in early September in Boise, Twin Falls, Glenns Ferry, and Grand View. Additional meetings were held in October with state and local officials, local trade associations, environmental organizations, businessmen, and representatives of the Bureau of Land Management. As a result of public input from these meetings, the Air Force, with BLM, adjusted the environmental impact analysis process for the realignment of Mountain Home Air Force Base (MHAFB) and the accompanying proposal to expand range capability. A two-tiered Environmental Impact Statement (EIS) approach was developed. Tier 1 will assess the impacts of the MHAFB realignment and the generic impacts of a proposed expanded range capability. If a decision is made to pursue a range expansion option, the site-specific impacts of a proposed expanded range capability and alternatives would be addressed in a Tier 2 EIS. Although airspace actions and decisions may be made as a result of the Tier 1 EIS, no range boundary decisions would be made until after the completion of the Tier 2 EIS.

During the scoping process, the Air Force received considerable public input regarding issues that need to be addressed. Most of the comments related to a proposed expansion of range capability, and not the realignment of MHAFB. Public and agency concern was expressed regarding impacts from proposed supersonic flight activity, impacts on recreational resources, effects upon ranching and grazing, threats to public safety, and numerous other issues. These issues are addressed programmatically in the Tier 1 EIS. More detailed, site-specific analyses would be performed for the Tier 2 EIS. Consequently, public scoping comments pertaining to potential site-specific impacts of the proposed expansion of range capability would be incorporated in the Tier 2 EIS.

The Air Force is committed to working with the people of Idaho to complete a process by which everyone can fully understand the proposals, alternatives, and potential impacts related to expanding range capability. The Air Force recognizes the need for public comment and participation in the decisions regarding a proposed expansion of range capability.

1.0 PURPOSE OF AND NEED FOR THE ACTIONS

1.1 INTRODUCTION

1.1.1 The Commission on Base Realignment and Closure

The Defense Secretary's Commission on Base Realignment and Closure (Commission or CBRC) was chartered on 3 May 1988 by the Secretary of Defense to recommend military installations within the United States, its commonwealths, territories, and possessions for realignment and closure. Subsequently, the Base Realignment and Closure Act (Public Law 100-526, 24 October 1988) endorsed the Secretary's Commission and required the Secretary of Defense to implement its recommendations unless he rejected them in their entirety or the Congress passed (and the President signed) a Joint Resolution Disapproving the Commission's recommendations.

The primary criterion used by the Commission for identifying candidate bases was the military value of the installation. However, cost savings were also considered, as were the current and projected plans and requirements for each military service. Lastly, the Commission focused its review on military properties and their uses, not military units or organizational/administrative issues.

On 29 December 1988, the Commission recommended the realignment and closure of 145 military installations. Of this number, 86 are to be closed fully, 5 are to be closed in part, and 54 will experience a change (either an increase or decrease) as units and activities are relocated.

On 5 January 1989, the Secretary of Defense approved those recommendations and announced that the Department of Defense would implement them. The Congress did not pass a Joint Resolution disapproving the recommendations within the time allotted by the Act.

Therefore, the Act now requires the Secretary of Defense, as a matter of law, to implement those closures and realignments. Implementation must be initiated by 30 September 1991, and must be completed no later than 30 September 1995. Thus, the realignment portion of this environmental impact statement (EIS) addresses only implementation; realignment decisions are by law final.

As part of the realignment and closure decisions, the Commission determined that the Tactical Air Command (TAC) assets at George Air Force Base (AFB), California, should be relocated. Mountain Home AFB (MHAFB), Idaho, was selected to receive the majority of the George AFB assets. The Air Force is preparing this EIS to examine and evaluate the impacts of implementing the decision to relocate the aircraft, equipment, and personnel to MHAFB. This EIS also assesses the generic impacts of a proposed expanded range capability. The Council on Environmental Quality (CEQ) has

confirmed the requirement for the Air Force to assess the impact of a proposed expanded range capability as part of the same EIS process as the base realignment.

Although this EIS addresses the impacts of both the realignment and a proposed expanded range capability, realignment of forces at MHAFB is not contingent upon an expansion of MHAFB's air-to-ground range, the Saylor Creek Range (SCR). However, the proposal for an expanded range capability in the vicinity of MHAFB is designed to improve the efficiency of training opportunities and avoid either costly deployments or elimination of some training operations. The Commission recognized a preliminary range expansion proposal and commented in their report that the military services should take steps to combine, consolidate, and expand airspace and training ranges to ensure a combat capability for the future.

1.1.2 Purpose and Need

1.1.2.1 Mountain Home Air Force Base Realignment

The Commission recommended transfer of assets from George AFB to MHAFB involving 94 F-4E and F-4G electronic combat aircraft and approximately 3,500 personnel. To accommodate the additional aircraft and personnel at MHAFB, the 366th Tactical Fighter Wing (TFW) at MHAFB will transfer 35 F-111A aircraft and approximately 1,600 personnel to other units. This will result in a net increase of 59 aircraft operating from MHAFB. The realignment of MHAFB will enhance command and control of electronic warfare operations by consolidating F-4 electronic combat and surface-to-air suppression functions with EF-111 electronic jamming air defense suppression aircraft (described in Appendix A) and will increase mission effectiveness at a reduced cost. The nature of the missions and combat roles assigned to the F-4s being transferred to MHAFB will require more range time per aircraft than for the departing F-111As.

1.1.2.2 Proposed Expanded Range Capability

Background

The SCR, located in southwestern Idaho, is one of TAC's smallest air-to-ground ranges. The SCR has historically supported the training needs of units located at MHAFB, the Idaho Air National Guard (IANG) stationed in Boise, Strategic Air Command (SAC) units based in the northwest, and TAC units based at Nellis AFB, Nevada; Cannon AFB, New Mexico; and other TAC units. Increasing activity of current users as well as increased demand as a result of the Base Closure and Realignment Act will result in increased range requirements near MHAFB.

In early 1984, the 366 TFW at MHAFB recognized a need to expand the SCR to accommodate the training realism shortfall for the F-111 mission and the new EF-111 electronic combat mission. A broad-based, long-range internal evaluation of the greater Saylor Creek vicinity was prepared to determine the potential for an expanded capability to serve aircraft systems requirements. Preliminary results indicated that there was substantial potential to meet Air Force range needs near MHAFB; thus, the Air Force began a formal effort to develop an expansion proposal and alternatives. The Air Force planned to begin the public scoping process under NEPA in early fall 1989.

In January 1989, while the Air Force was still conducting the preliminary work on their proposal to expand the SCR, the Secretary of Defense's Commission recommended the MHAFB realignment. This highlighted a need for an expanded range capability that would enable the Air Force to meet its current and future training requirements. In addition, airspace modification in the vicinity of MHAFB would be required to permit aircrews at MHAFB to fulfill their intercept and air-to-air mission requirements.

Range Characteristics

The training of tactical fighter aircrews, using the latest operational weapons systems and tactics, is the foundation upon which the Air Force builds, maintains, and ultimately achieves combat readiness of its operational fighter forces.

Air Force range complexes provide the only peacetime arena for aircrews to practice combat training. A range and its airspace must be sufficient in scope and depth to allow aircrews to train daily with a realistic mix of operational weapons, tactics, and electronic combat systems. These specialized ranges provide a unique simulated combat training environment in which aircrews can learn how to most effectively use their airborne weapons systems to successfully attack assigned targets. A conceptual or generic range complex is shown in Figure 1.1-1.

It is Air Force policy for all range complexes to be planned, developed, maintained, and improved consistent with their unique potential to provide realistic environments for training and testing. Realism in both threat and target design is important for today's range complexes since they represent the only peacetime opportunity for aircrews to practice necessary combat skills with the actual weapons systems and tactics they would employ in combat. It is essential for combat readiness that tactical fighter aircrews train as they will fight.

For scheduling purposes, available range hours are divided into periods. The length of this period is predicated upon several factors, including training requirements of the users, fuel endurance, scenario, or type of mission, etc. The optimum length, considering these factors and scheduling effectiveness, is 30 minutes per period. Therefore, when defining range capacity, it is necessary to quantify the requirement in terms of available periods. The number of sorties associated with one period varies

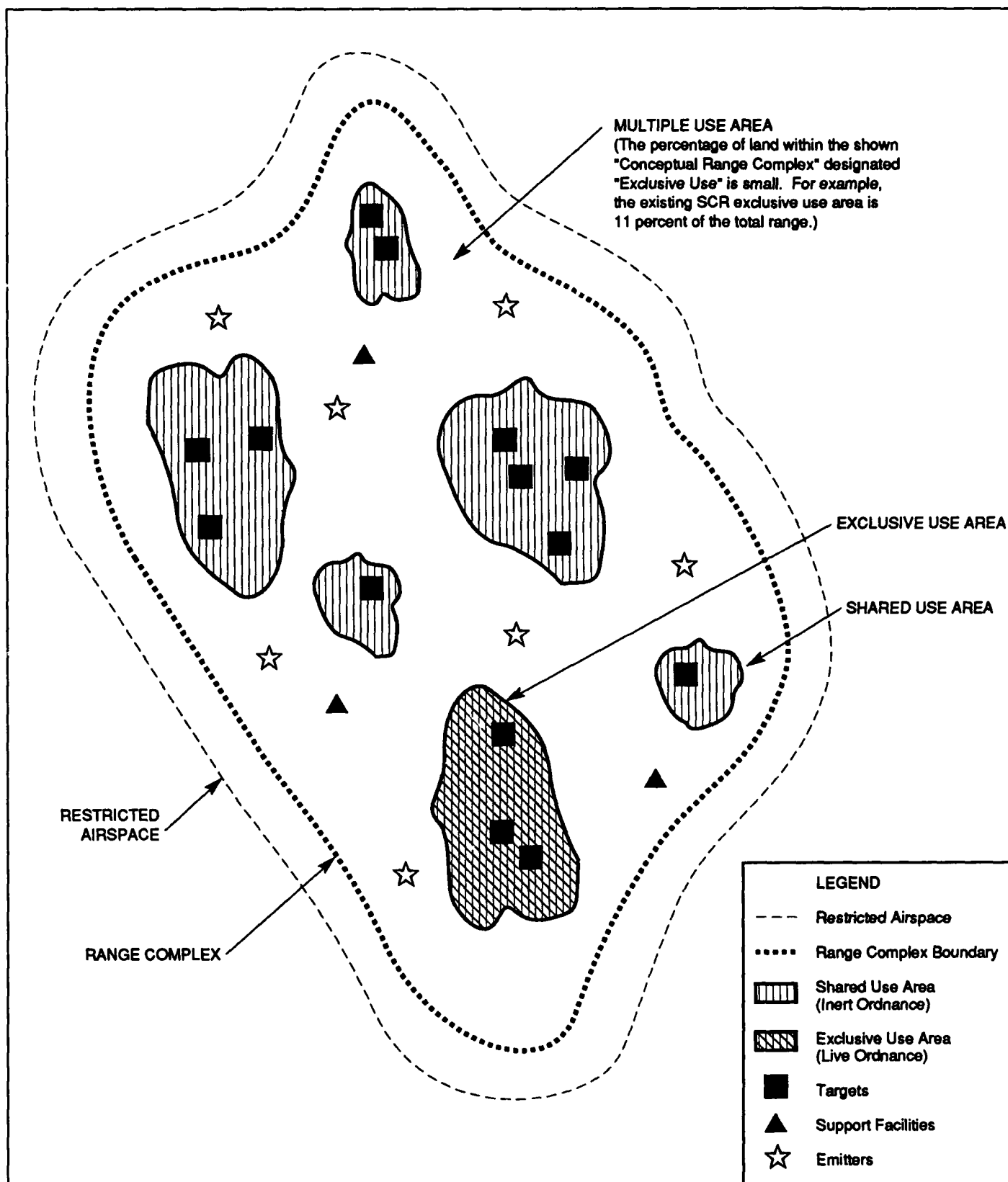


Figure 1.1-1
CONCEPTUAL RANGE COMPLEX LAYOUT

according to the user's type of aircraft, mission, and training objectives. For instance, most F-4 and F-16 missions involve either two or four aircraft while an EF-111 mission may involve only a single aircraft.

Optimizing the utility of individual range complexes is best achieved by tailoring them to the operational mission of the local unit. Considerable planning is required to acquire suitable airspace (i.e., restricted airspace, military operations areas [MOAs], and military training routes [MTRs]) and real estate. The Air Force coordinates with cooperating federal, state, and local agencies and the public to ensure multiple use can be achieved whenever possible. The objective is to maximize local mission training requirements within the available lands and airspace and minimize the impact on the public.

Safety considerations for the public and the military are paramount in range complex design. Aircrew safety is provided through central range control and flight pattern design. Civilians and their property are provided maximum protection through careful planning and ongoing review and analysis of range procedures.

Range complex land and airspace management are coordinated by the Air Force with all other users. This minimizes conflicts between a specific type of public use and Air Force mission requirements. In the case of the SCR, grazing is the primary public land use. Grazing is managed by the Bureau of Land Management (BLM) based on Public Land Orders (PLO) 1027 and 4092. The majority (almost 90 percent) of the SCR, approximately 97,000 acres of the total 109,000 acre withdrawal area, is available for multiple use, and public access is not restricted. For safety considerations, a small portion of the withdrawal area at the SCR, the 12,000-acre impact area, is fenced and designated as "exclusive use" for the Air Force.

Current Capability

The current capacity of the SCR is approximately 3,700 range periods per year.¹ With perfect scheduling and 100-percent utilization of available days (225 days per year), there should be a total of 5,400 range periods available per year on the range. However, experience has shown that 63 to 68 percent effective utilization is realistic, which means that between 3,400-3,700 effective periods can actually be used. This reduced capacity results from unflyable weather at the range or base, aircraft problems causing cancellation of the flight, non-effective student training, and unscheduled non-flying days (i.e., exercises, no-fly days, and safety days). The projected 225 use-days are extracted from the current and forecasted MHAFB programmed flying training (PFT) calendars. PFT calendars are developed from historical data and operational experience to provide a baseline number of flying days

1. When calculating actual usable range periods, the present range is considered a conventional range. Appendix B contains definitions of conventional and electronic combat ranges.

available to an Air Force base. At MHAFB, the baseline number of flying days on the PFT is 225 days. Planners use the PFT calendars to develop annual training programs and flying hour projections.

The range has a limited inventory of electronic combat equipment and cannot accommodate complex tactics, escape maneuvers, weapon deliveries, and composite-force training that must be applied in realistic combat training exercises. In addition, the 12,000-acre impact area is among the smallest in the TAC inventory, and no live ordnance can be dropped.

The size of the SCR also limits the range flexibility and imposes constraints on training (e.g., restricted range bombing patterns) that severely degrades realism. As a result, aircrews attack the same targets, in the same location, from the same direction, in the same ways, day after day -- a situation atypical of a real combat environment. Such an unrealistic environment creates bad habit patterns that could be carried into combat.

Need for an Expanded Range Capability

SHORT-TERM NEEDS. After realignment, the mission of EF-111 and F-4 aircraft based at MHAFB will be defense suppression through electronic jamming of enemy air defense radars by EF-111s; and destruction of enemy surface-to-air radars and missile sites by F-4E/Gs. Electronic combat training for MHAFB EF-111s and F-4s will require a range complex that electronically and physically replicates an enemy air defense and target array to include both electronic emitters, ground targets, and the land and airspace around them.

INTERMEDIATE-TERM NEEDS. There will be a need for an expanded range capability to allow for more electronic combat threats and targets, as well as a need for more practice ordnance areas and live ordnance areas. To optimize Air Force training requirements for MHAFB in addition to other projected users, an expanded range complex should be tailored to give aircrews the visual and electronic appearance of a high-intensity battlefield that is defended in depth. This requires two sets of geographically separated enemy lines of defense and a variety of deep interdiction targets to provide composite-force training. It also calls for numerous electronic combat threats and state-of-the-art electronic scoring instrumentation throughout the simulated battlefield (see figures 1.1-2 and 1.1-3).

LONG-TERM NEEDS. New aircraft, new tactical missions, and enemy weapons systems upgrades require the Air Force to build as much flexibility as possible into range design today, to prepare for the long-term challenges of the future.

Additional discussion of short-term, intermediate-term, and long-term requirements is provided in Chapter 2.0.

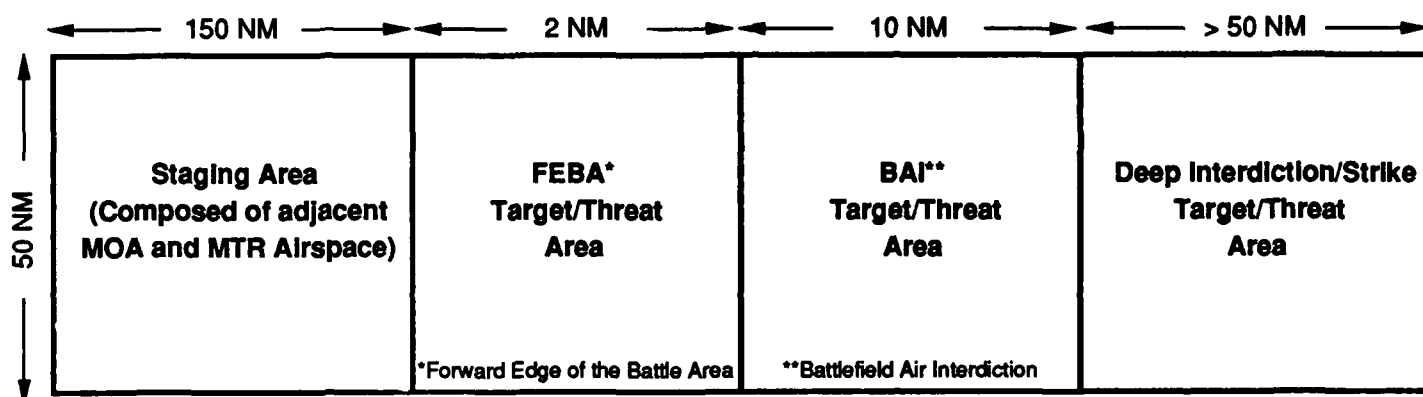


Figure 1.1-2

**APPROXIMATE SIZE REQUIREMENTS FOR A RANGE
SIMULATING A HIGH-THREAT BATTLEFIELD
(IN NAUTICAL MILES [NM])**

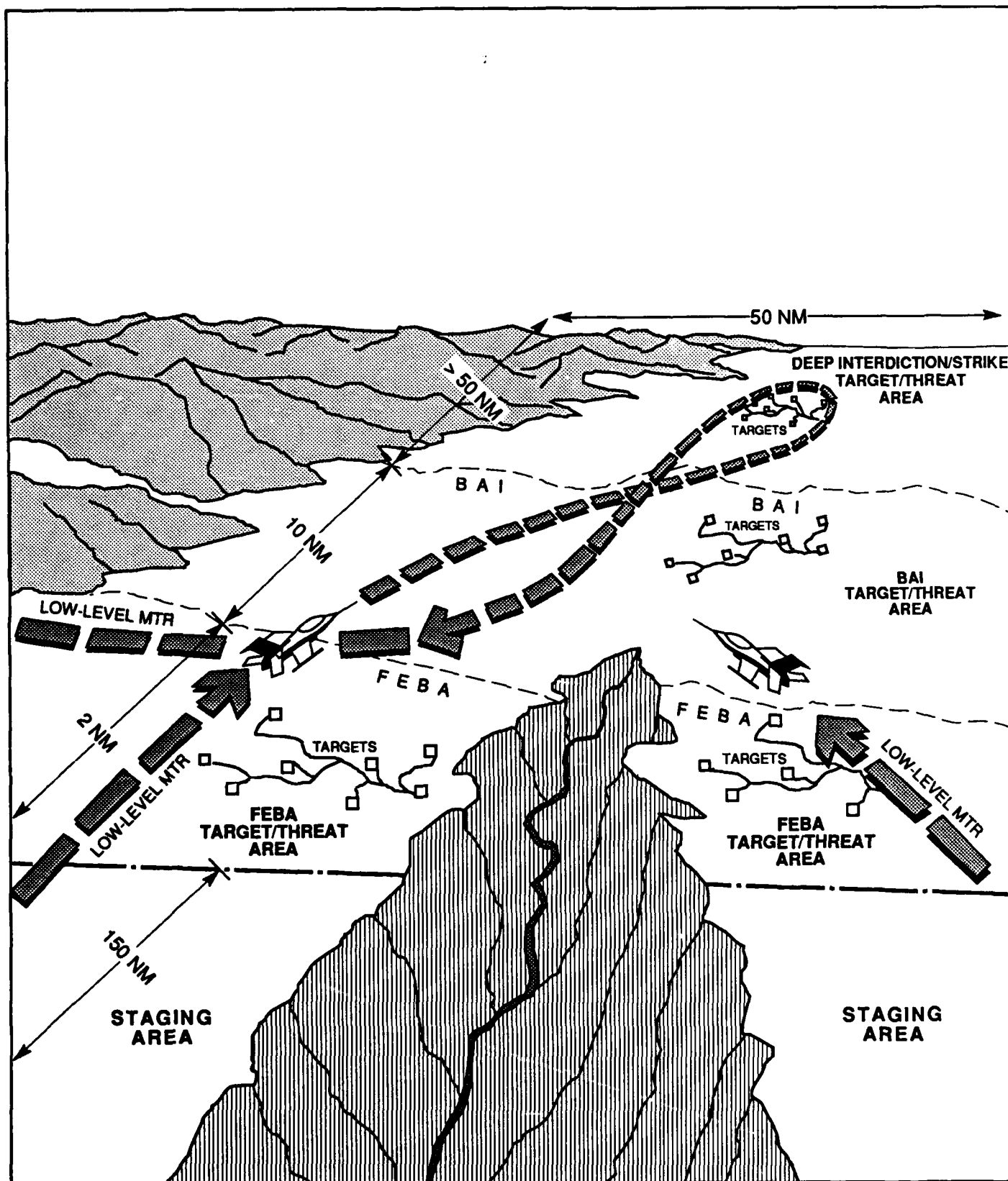


Figure 1.1-3

SCHEMATIC DIAGRAM OF TRAINING ON A
SIMULATED HIGH-THREAT BATTLEFIELD

Expanded Range Requirements

AIR-TO-SURFACE RANGE CAPABILITY. The Air Force need for an expanded range capability stems from post-realignment training requirements for approximately 4,600 effective conventional range periods and approximately 9,000 tactical and electronic combat range periods. The current and anticipated SCR users will require range capability for 13,600 range periods. The present capacity of the SCR (3,700 range periods) is much smaller than the required capacity after realignment. Without expanded range capacity, there would be a 9,900 range period shortfall.

ELECTRONIC COMBAT CAPABILITY. Electronic combat is a fundamental part of the Air Force mission. Combat experience and studies indicate that if aircrews are to be effective in combat against increasingly capable defenses, they must be thoroughly trained in the use of state-of-the-art electronic countermeasures and sophisticated ordnance, as well as precision teamwork among several aircraft. They must be able to find, attack, or penetrate a diverse array of enemy defense systems in a fluid combat/threat environment. Most of these threats are supported by various types of radar, optical, or infrared guidance systems. To survive, aircrews require regular practice using tactics, weapons, and electronic countermeasures. The existing electronic combat range capability at the SCR cannot accommodate the electronic combat mission of the F-4Gs arriving from George AFB, the EF-111 aircraft stationed at MHAFB, or other users.

COMBINED CONVENTIONAL AND TACTICAL/ELECTRONIC COMBAT CAPABILITY. A conventional range is designed for teaching and practicing basic bombing techniques. The SCR is a conventional range with some tactical targets. Due to size limitations, it cannot be used for simultaneous conventional and tactical training. A tactical/electronic combat range allows aircrews to sharpen skills learned on a conventional range in a realistic environment. However, the SCR cannot provide sufficient realism when used as a tactical range.

To meet the Air Force's training requirements (approximately 13,600 effective range periods) following the MHAFB realignment, a combination of one conventional and four tactical/electronic combat ranges (within a larger range complex) will be needed. The five-range requirement results from both the stated requirements above and historical data on range use throughout the Air Force (see tables 1.1-1 through 1.1-3). All five ranges within the range complex would support delivery of training (inert) ordnance, and at least one area would be needed for live ordnance delivery training. A tactical/electronic combat range is typically used 190 days per year. The lower utilization rate (compared to a conventional range) is due to periodic closure for range maintenance.

PROXIMITY TO A MILITARY AIRFIELD. Airfield proximity is required to support aircraft using a range. Proximity to a military airfield maximizes training time on the range while minimizing fuel costs. In the case of student pilot training it optimizes the integration of classroom instruction with hands-on

experience. An airfield in close proximity to the range also provides the logistics support (e.g., parts and fuel) required to maintain and operate aircraft using the range. The airfield also provides the administrative and personnel support facilities needed to conduct exercises over an extended period of time, and acts as a depot and staging area for supporting the range itself.

Table 1.1-1

**Range Capability and Needs
(Stated in Range Periods)**

	<u>Needed</u>	<u>Available</u> ¹
Pre-realignment	950 conventional + 950 tactical/electronic combat = 1,900	3,700 total
Post-realignment	4,581 conventional + 8,963 tactical/electronic combat = 13,544	3,700 total

Note: 1. The SCR conventional and tactical/electronic combat targets are currently co-located. The total usable annual range periods at the SCR conventional range is approximately 3,700 range periods.

Table 1.1-2

Requirement for One Conventional Range

Capability	3,700 range periods per year
Need	4,581 range periods per year
Difference	(881) range periods per year ¹

Note: 1. Training associated with the 881 annual range period shortfall could be completed on a scoreable tactical range without substantially impacting aircrew training. Doing so allows the Air Force to reduce costs by not building a second conventional range and reducing the long-term costs of hiring personnel to man a second conventional range.

Table 1.1-3

Requirement for Four Tactical/Electronic Combat Ranges

Capability	3,100 range periods per year multiplied by 4 ranges	= 12,400 ¹
Need	8,963 range periods per year plus 881 conventional range periods per year (from above)	= 9,844
Difference		= 2,556

Note: 1. The total usable annual range periods at the SCR tactical/electronic combat range is approximately 3,100. The difference in use rates between conventional and tactical/electronic combat ranges is due to fewer use days on a tactical/electronic combat range because of clean up, multiple use, and other factors.

In the case of MHAFB, a proposed range complex with expanded capability within 150 nautical miles² (NM) would provide 1 1/2 hours of training for student aircrews. The 150 NM distance to a range complex would give aircrews 30 minutes of tactical flight training prior to entering a range, 30 minutes on the range, and 30 minutes while returning to the base. While the average training flight durations will vary with the type of aircraft (less than 1 1/2 hours for F-4s, more than 1 1/2 hours for F-111s), a 150 NM radius provides a goal for range location regardless of the type of aircraft assigned to MHAFB -- current or projected.

Based on a proposed range complex located 150 NM from MHAFB, F-4s would expend 900 gallons of fuel to reach the range, leaving approximately 1,000 gallons of fuel or about 30 minutes of flying time available for tactical training. The remaining 900 gallons of fuel would be used for returning to base and for reserve for unforeseen adverse weather conditions or for emergency situations. Any range located greater than 150 NM from MHAFB would increase transit time and fuel required, resulting in less time to accomplish effective training and an increase in the overall cost of that training.

RANGE SIZE/REALISTIC DESIGN. A range complex should be designed to meet intermediate and long-term Air Force needs. The optimum size of a complex should approximate the size of a representative high-threat battlefield or area as shown in figures 1.1-2 and 1.1-3. As a result, the ideal area in which a range complex would be confined is 62 by 50 NM. The elements of a range complex would be within such an optimum area and would provide aircrews with realistic training for defense in depth or for layered defenses that they would encounter in a possible conflict (see Figure 1.1-3). The entire complex area would be overflown by military aircraft using the individual target areas. During target runs, aircraft would be maneuvered to avoid simulated ground threats and engage in air-to-air combat (see Figure 1.1-3). While the entire airspace above the 62-by-50-NM area would be used, the Air Force would only need control of the exclusive use and shared use target areas, the threat/emitter sites, and supporting facilities (see Figure 1.1-1). Additionally, the Air Force would need to control access to certain areas within the entire complex. Access control is required to ensure safety of individuals and livestock.

Such a complex would also provide flexibility for practicing tactics such as multiple run-ins with supporting aircraft. These tactics cannot be adequately practiced on the SCR, which consists of a ground impact area of approximately 3 by 6 NM. This size physically limits the number of aircraft that can participate in a training event.

The size of a range complex should allow each conventional and tactical range within the complex to operate realistically (independently or together) for an integrated training scenario. The size for a standard tactical range layout is approximately 15 miles in diameter. More space is needed in order to

2. One nautical mile = 1.15 statute mile.

provide training flexibility by reconfiguring the range. This can be accommodated by an increase in length or width.

Each target array should be of sufficient size to support the needed scenario. The Forward Edge of the Battle Area (FEBA) target array(s) should be at least 10 by 10 NM. The Battlefield Air Interdiction (BAI) and Deep Interdiction target array(s) should be no less than 20 by 18 NM. Inert ordnance impact areas should approximate a 15,000-foot radius circle around each target. Prototypical FEBA, BAI, and Deep Interdiction target arrays are depicted in figures 1.1-4 through 1.1-6.

AIRSPACE. Airspace is needed to practice basic aircraft maneuvers, advanced air-to-air tactics, standoff electronic combat, stand-off weapons delivery procedures, or staging for composite force training. To be effective, this airspace must be contiguous with an expanded range complex. To maximize training and replicate the airspace previously available to the F-4s at George AFB, the airspace should extend from ground level to unlimited altitude with lateral dimensions of 150 by 50 NM.³ Further, changes to military training routes (MTRs) may be needed for accessing a range with expanded capability.

LIVE ORDNANCE AREAS. An expanded range complex should contain at least one live conventional ordnance target area.⁴ Various types of live ordnance must be employed by F-4s, other existing and future aircraft to provide combat realism and reinforce skills needed to prepare for and execute live ordnance delivery missions. Live ordnance training is presently not allowed on the SCR. Typical live conventional munitions to be used include 500-pound (lb) general purpose bombs (Mk 82s), 750-lb general purpose bombs (Mk 117s), 1,000-lb general purpose bombs (Mk 83s), 2,000-lb general purpose bombs (Mk 84s), cluster bombs (CBU 52/58), 30-mm cannon rounds, and illumination flares (LUU 2). Illustrations of both live and inert bombs are provided in Appendix A.

SUPERSONIC FLIGHT OPERATIONS. An expanded range capability and associated airspace should support supersonic flight. Modern combat tactics and the handling characteristics of high performance aircraft dictate flight within the transonic and supersonic regimes by aircrews on a recurring basis.

1.1.3 Tiered Decisionmaking and Analysis

The CEQ approach called "tiering" allows environmental analyses to proceed prior to the completion of project design and development. Tiering is especially appropriate when the environmental analyses and documents evaluate decisions proceeding from the general to the site-specific.

3. Restricted airspace should be of altitudes (surface to unlimited) to allow all types of weapon deliveries.

4. To ensure public safety, this range should be at least 17 by 17 miles in area.

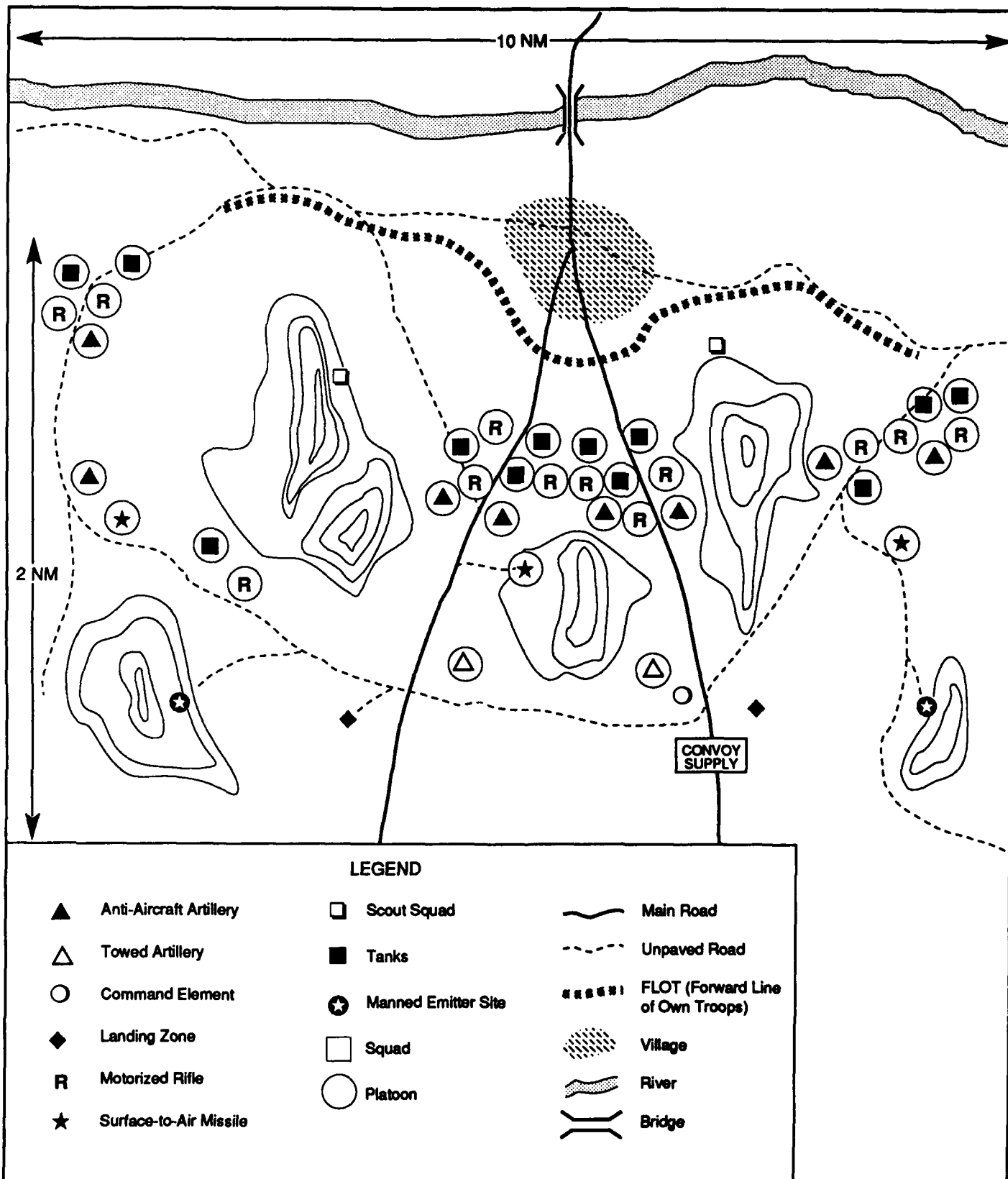


Figure 1.1-4

PROTOTYPICAL FORWARD EDGE OF THE BATTLE AREA

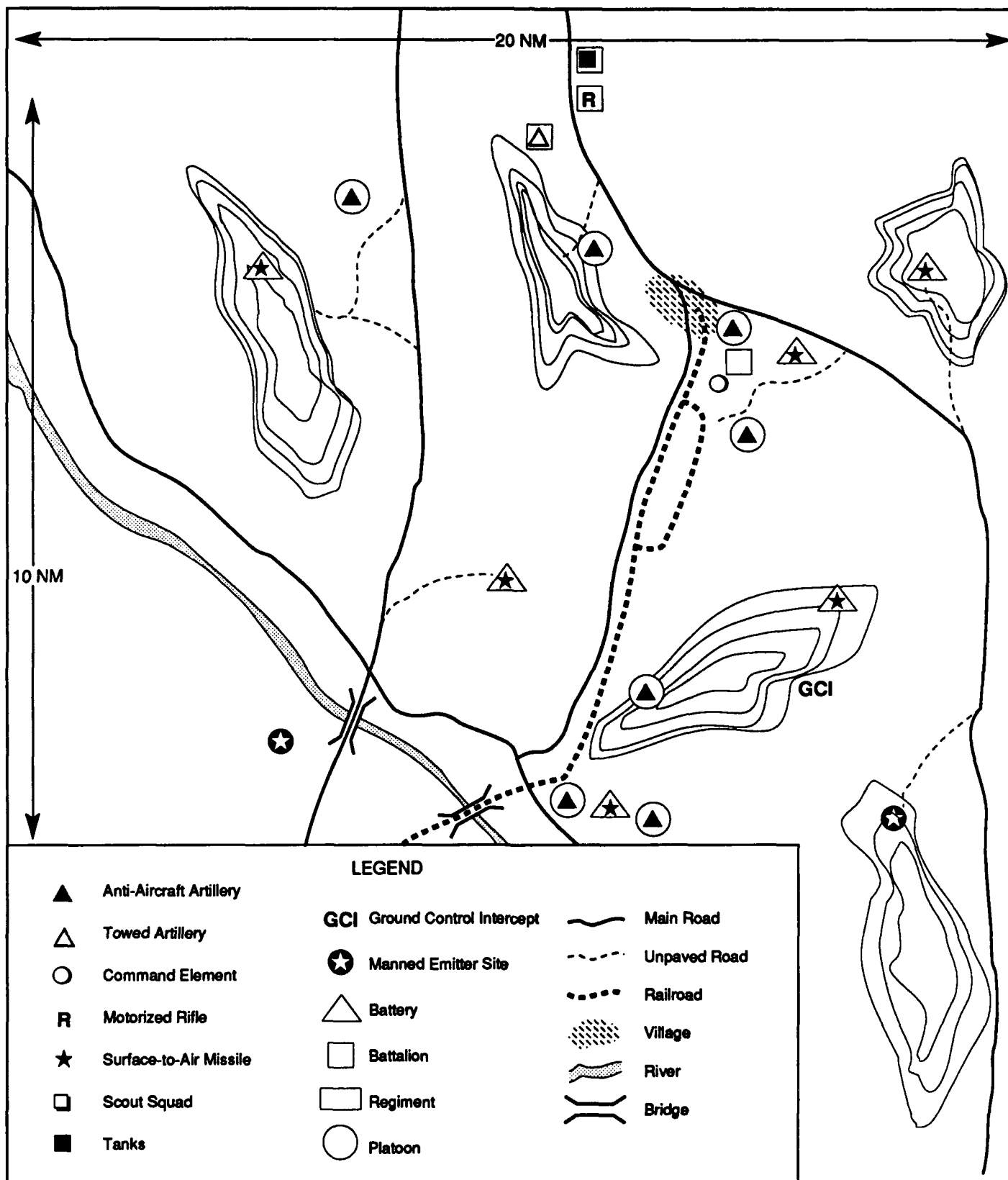


Figure 1.1-5
PROTOTYPICAL BATTLEFIELD AIR INTERDICTION

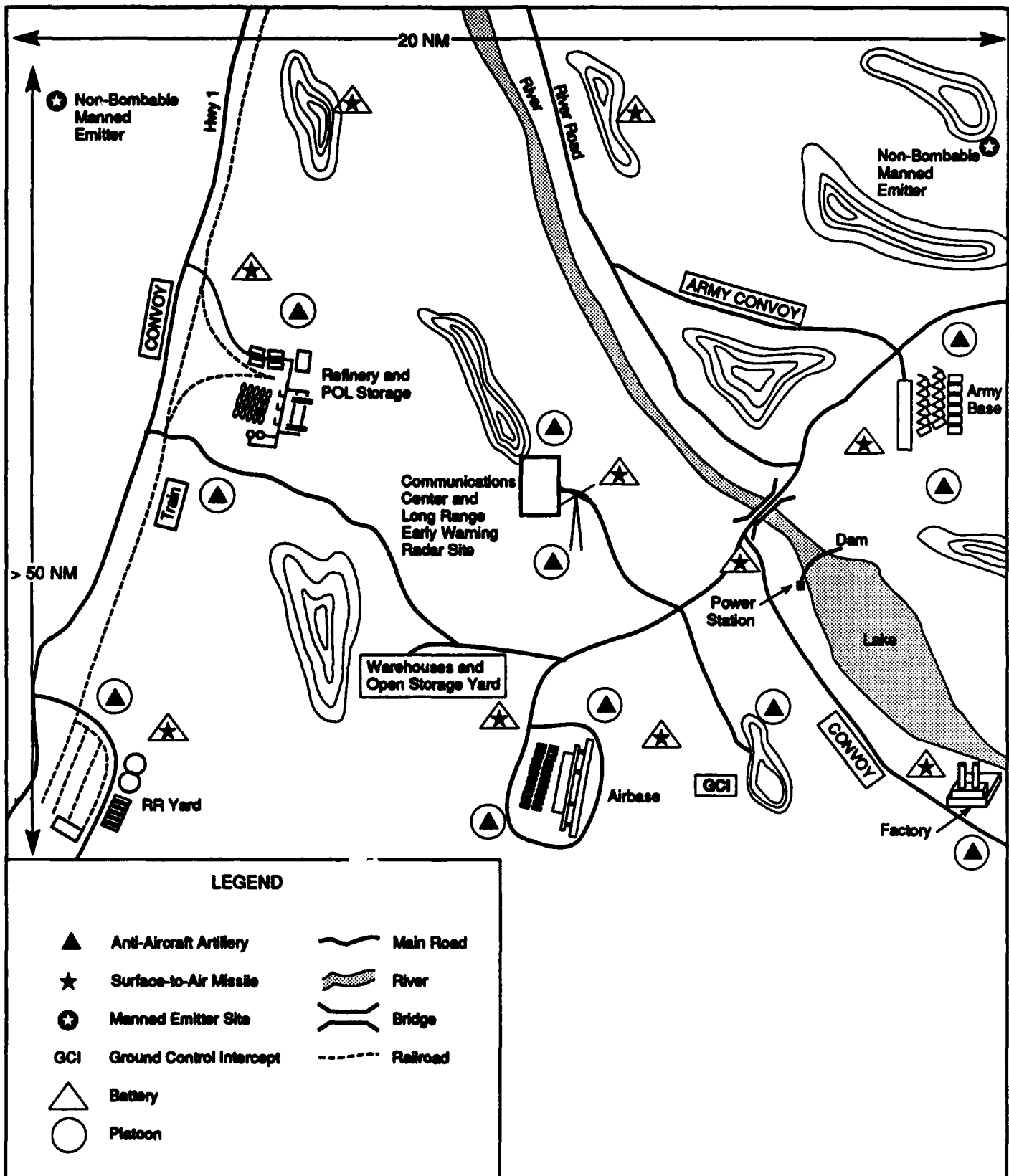


Figure 1.1-6
PROTOTYPICAL DEEP INTERDICTION

This Tier 1 EIS, in addition to evaluating the specific impacts of the MHAFB realignment actions, identifies and evaluates in general terms the potential expansion of range capability in southwestern Idaho and reasonable alternatives available to meet training requirements. An example of other possible actions to meet training needs would be to use air-to-air refueling missions to fly the aircraft to other locations for training sorties. Air Force short-term, intermediate, and long-term training requirements are identified in this Tier 1 EIS. Tier 1 will contribute to the decision to either proceed further with detailed studies and analysis for a range capability expansion in southwestern Idaho, or to select other alternatives. This Tier 1 EIS will also provide the initial framework (operational criteria, environmental attributes for the area, and description of environmental impacts associated with ranges) for use in the subsequent Tier 2 EIS if the decision is made to pursue a range expansion option.

Thus, the Tier 1 EIS will accomplish the following:

1. Assess the impact of realignment actions on the MHAFB and surrounding community.
2. Describe a set of criteria and operational requirements to be used in developing range site(s). These requirements are stated in terms of short, intermediate, and long-term training needs.
3. Assess the impact of other reasonable alternatives to the proposed range expansion (e.g., air refueling missions to other ranges, temporary duty).
4. Describe the existing environmental baseline and characterize the sensitivities of all areas to current land uses and proposed range activities.
5. Develop a baseline of potential environmental impacts of range operations (e.g., aircraft noise, munitions effects, land-use compatibility, etc.).
6. Identify and assess proposals for revisions to existing special use airspace, and for supersonic operations above 5,000 feet AGL.

This Tier 1 EIS will be completed in June 1990 and will conclude with a Record of Decision (ROD). The ROD will include decisions regarding the impacts of (1) relocating 94 F-4E/G aircraft from George AFB; (2) removing F-111 aircraft from MHAFB; (3) proposed modifications to special use airspace; (4) a proposal to allow supersonic operations above 5,000 feet AGL in Idaho MOA airspace; and (5) whether to proceed further with ongoing studies to expand range capability in southwestern Idaho. The Air Force is currently participating in a citizen/government working group being facilitated by the BLM to help ensure all public concerns regarding the proposed expansion of range capabilities are addressed. The working group process will be conducted parallel with Tier 1 and will develop pro-

posals and alternatives to be evaluated in Tier 2 to meet short, intermediate, and long-term Air Force requirements.

The Air Force plans to start preparation of the Tier 2 EIS in the spring of 1990. Tier 2 would be a complete NEPA process for an EIS. It would include a Notice of Intent, Public Scoping, public hearing and comment on a Draft EIS, and a filing of a Draft and Final EIS with the Environmental Protection Agency (EPA), followed by an ROD. The subjects to be evaluated in Tier 2 would evolve through the public process, including scoping meetings. The main objective of that process would be to determine how the needs and requirements of all parties could be addressed in the Tier 2 EIS.

1.2 LOCATION OF THE ACTIONS

MHAFB and the SCR are located in southwestern Idaho (see Figure 1.2-1). The TAC fighter base lies in Elmore County, near the communities of Mountain Home, Grand View, Bruneau, and Glenns Ferry (see Figure 1.2-2). Boise is 50 miles northwest of the base. A map of the installation is provided in Figure 1.2-3.

The northern boundary of the SCR is located about 20 miles from MHAFB. The range is approximately 11.5 miles wide by 15 miles long for a total area of 174 square miles. The current ordnance impact area, which contains all the targets, is a fenced area consisting of approximately 12,200 acres near the center of the range (see Figure 1.2-4). It is designated as an exclusive use area with a surrounding safety buffer area that is a multiple use area.

The range is situated on a relatively flat plateau that is bounded by the Snake River about 6 miles north of the range boundary and by the Bruneau River canyon along the western boundary. Outside the 12,200-acre exclusive use area, the withdrawn area is a multiple use area (over 96,000 acres) where sheep and cattle grazing are permitted and managed by the BLM. A public county road with no public restrictions crosses part of the range area and leads to a scenic viewpoint and to southern parts of Idaho. The nearest occupied communities are Bruneau, about 7 miles northwest of the range, and Hammett, about 6.5 miles north of the range.

The SCR is associated with restricted airspace R-3202, which is composed of restricted areas R-3202A, R-3202B, and R-3202C (see Figure 1.2-5). Restricted area R-3202A is located about 20 air miles southeast of MHAFB (55 miles by road) in southern Idaho and covers about 297 square miles. Restricted areas R-3202B and C are adjacent to the south and cover about 199 square miles.

Restricted area R-3202 extends into Elmore County to the east. R-3202 is bordered on the south by the Saylor MOA, on the west by the Sheep Creek MOAs, and on the east by the Bruneau MOAs. Both

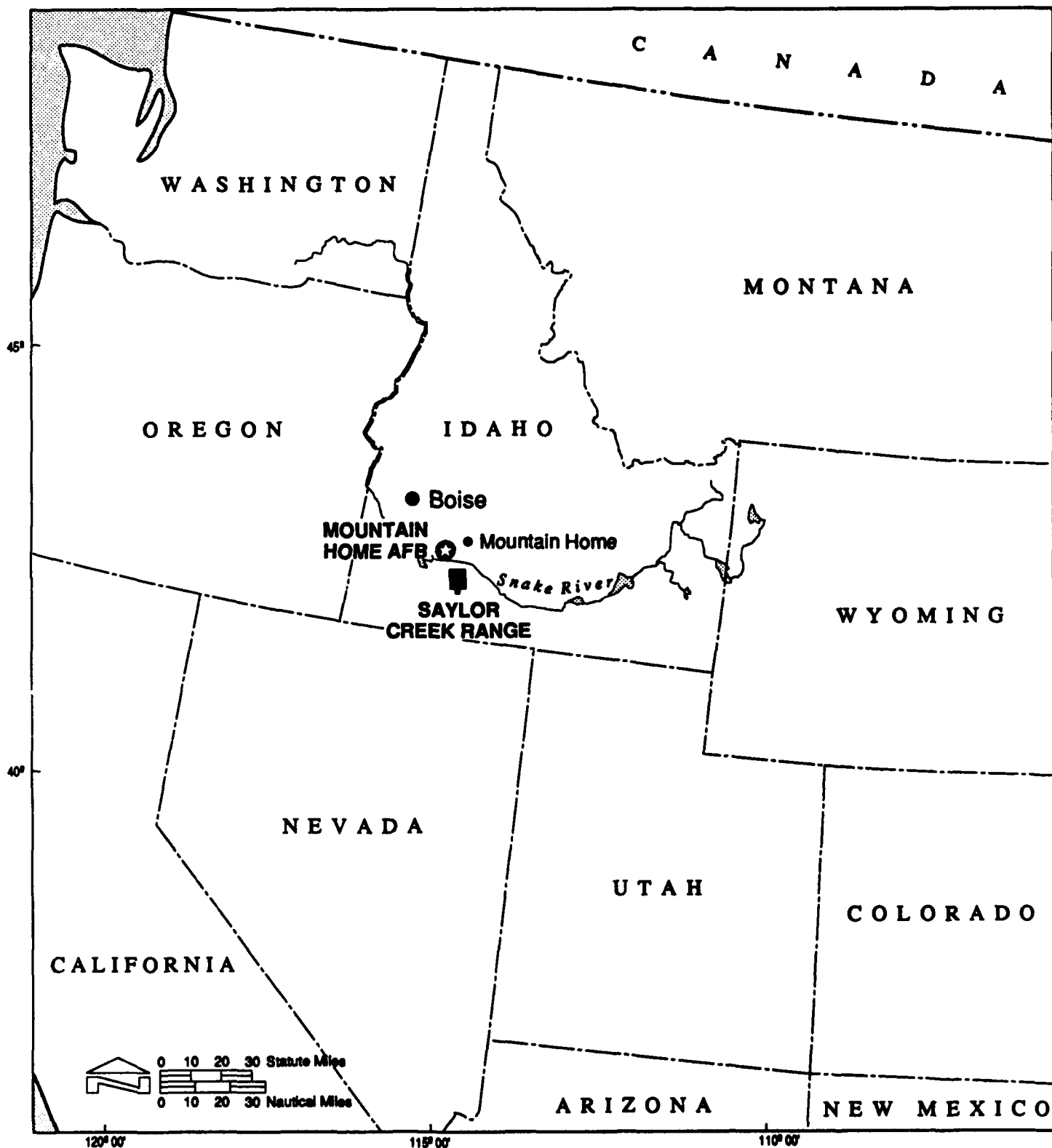


Figure 1.2-1

REGIONAL LOCATION OF MOUNTAIN HOME AFB
AND SAYLOR CREEK RANGE

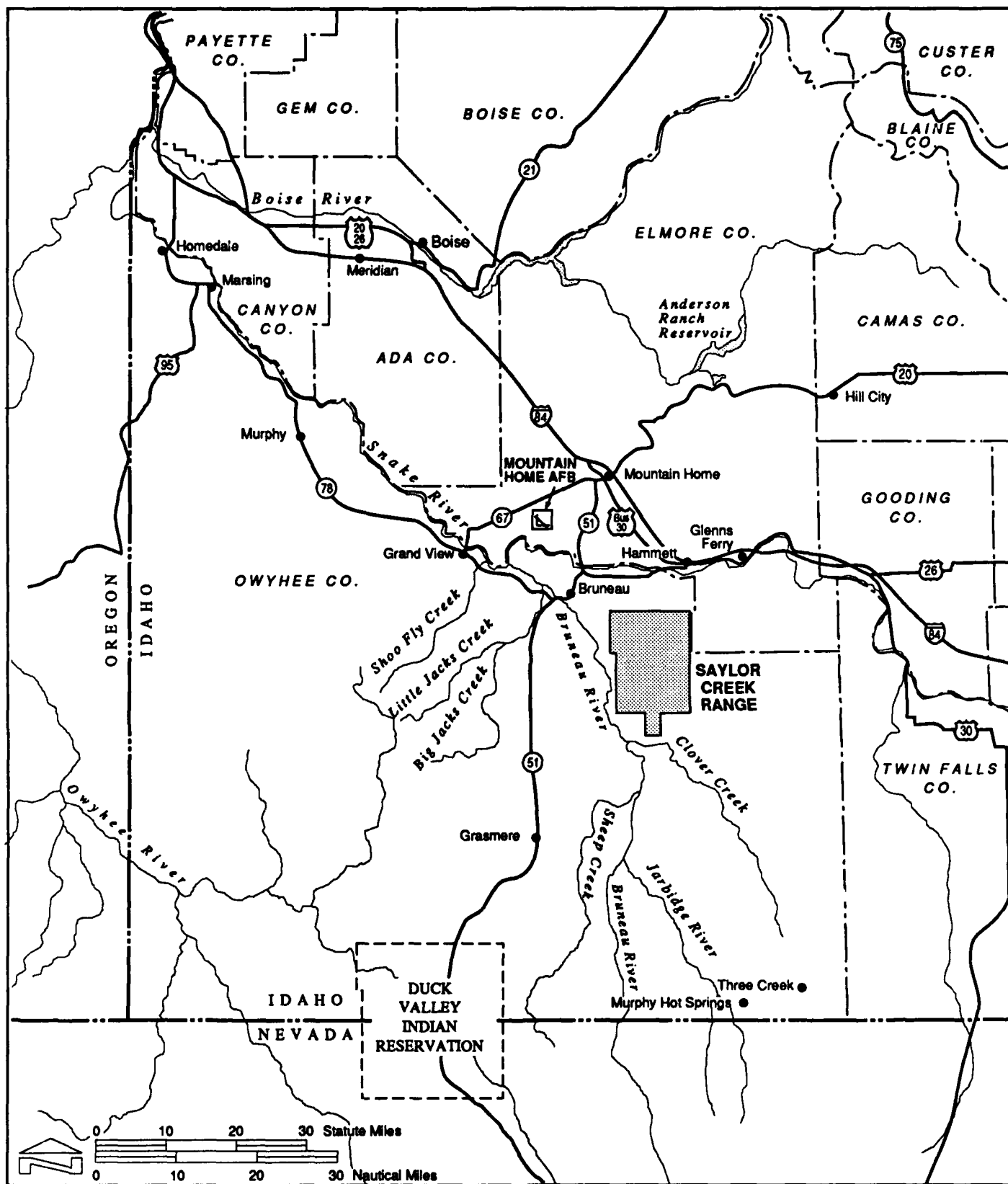


Figure 1.2-2

VICINITY MAP OF MOUNTAIN HOME AFB
AND SAYLOR CREEK RANGE

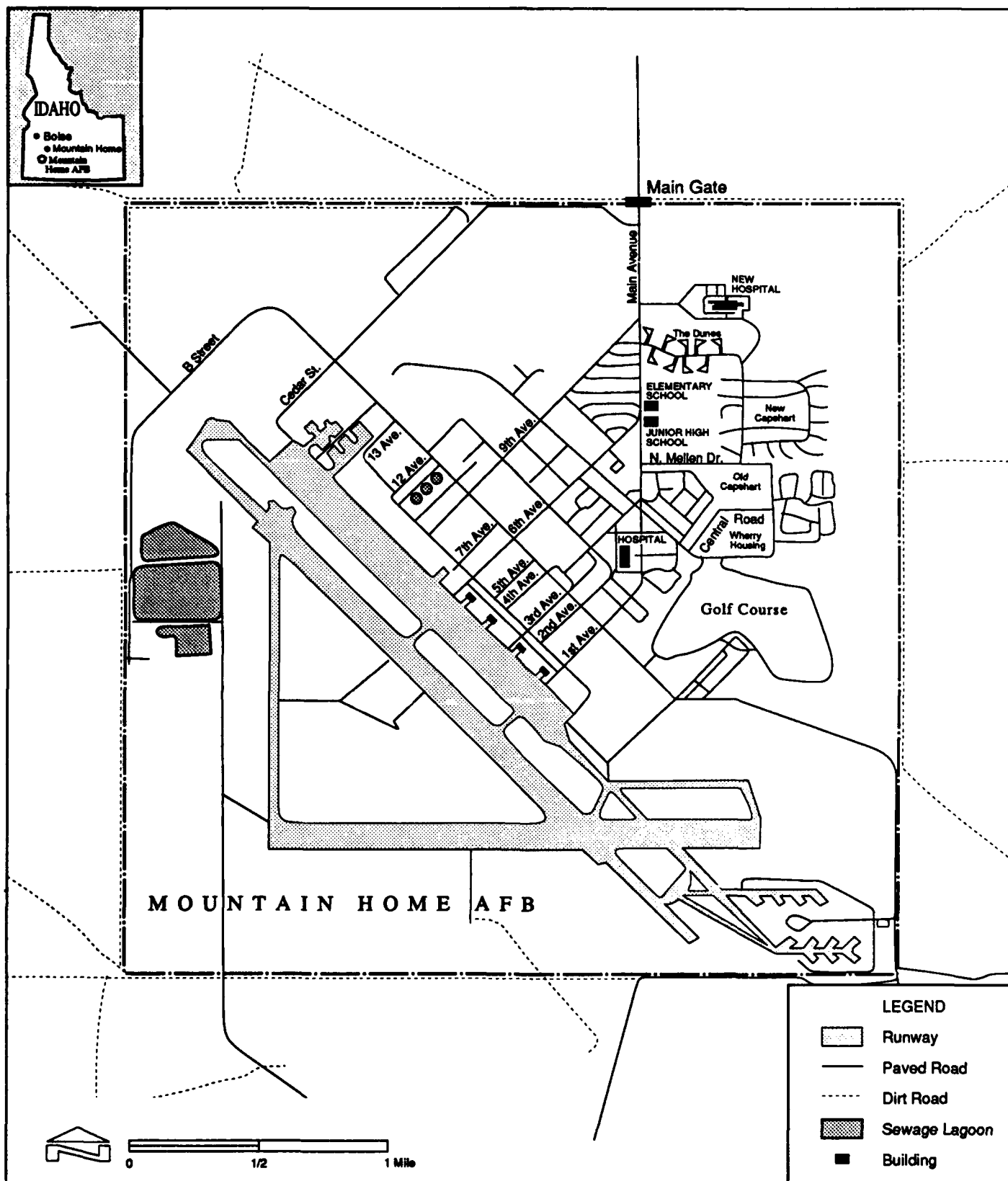


Figure 1.2-3

MOUNTAIN HOME AIR FORCE BASE

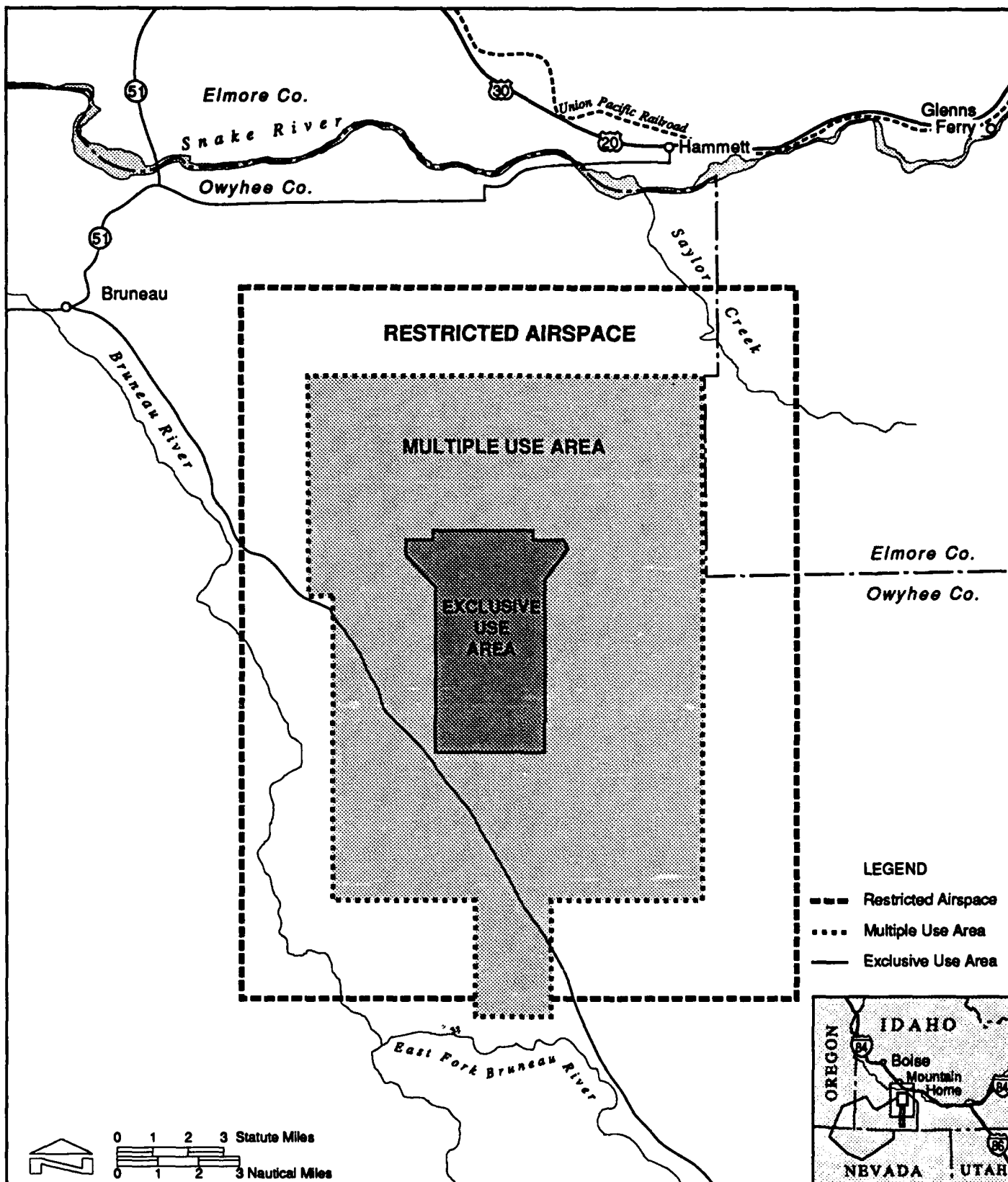


Figure 1.2-4
SAYLOR CREEK RANGE

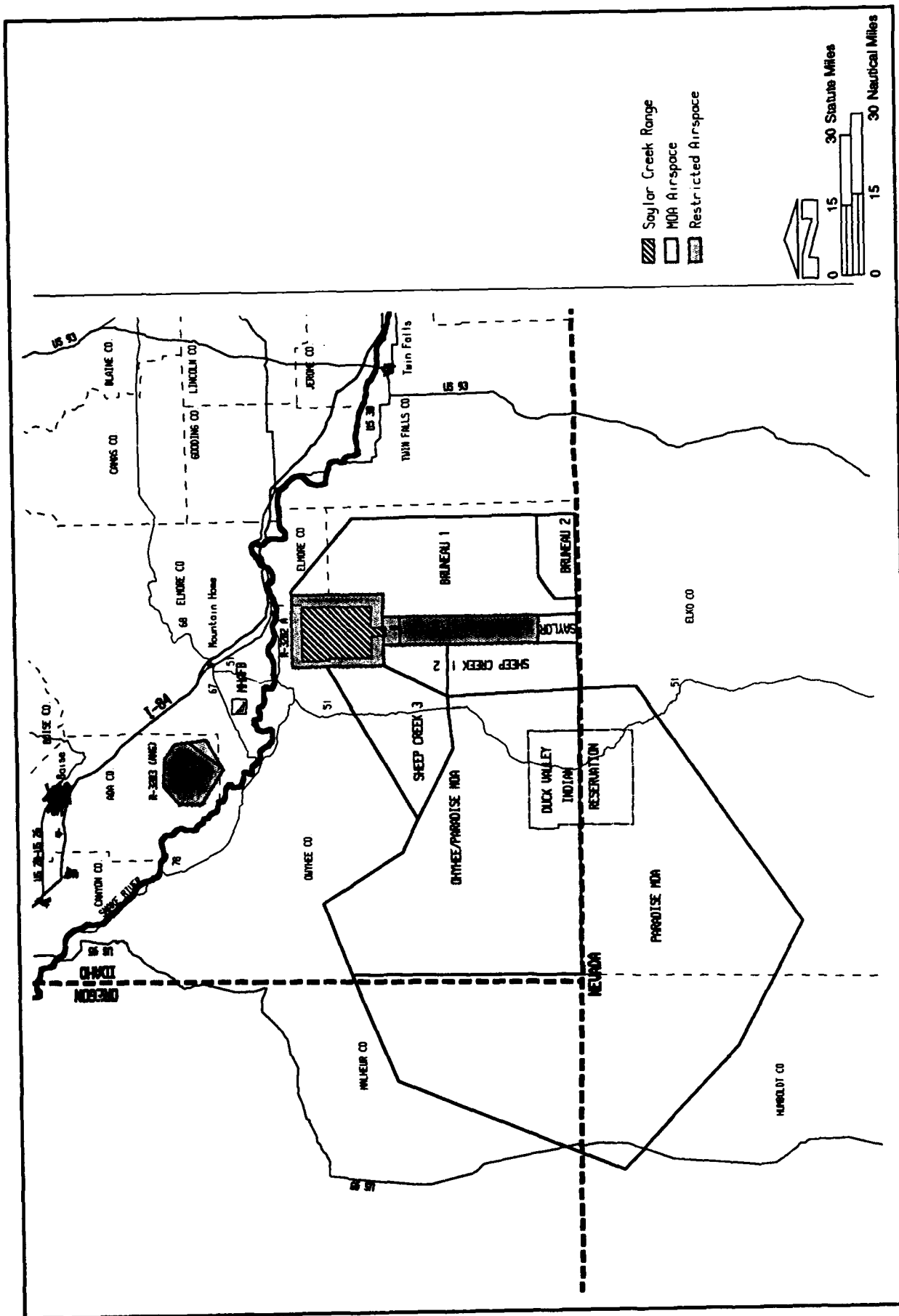


Figure 1.2-5

SAYLOR CREEK RANGE AND ASSOCIATED MOA AND RESTRICTED AIRSPACE

the range and the MOAs are controlled, maintained, and scheduled by the 366 TFW. MTRs used by MHAFB aircraft are shown in Figure 1.2-6.

A proposed expanded range capability would involve land area located in southwest Idaho. Proposed airspace modifications to accommodate the increased mission requirements of MHAFB units would occur in airspace located over eastern Oregon and southwest Idaho. No airspace changes would be required over Nevada. The land area and airspace boundaries of the study area for a proposed expanded range capability are shown in Figure 1.2-7.

1.3 SCOPING PROCESS AND PREPLANNING ANALYSIS

Air Force regulations regarding the National Environmental Policy Act (NEPA) process state that there shall be an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action. This process is called scoping. As part of scoping, the Air Force as lead agency invited agency and public participation to determine the scope of the EIS and the significant issues to be analyzed in it. Those issues which are not significant or which have been covered by other environmental review are identified and referenced.

The scoping process for this EIS began in February 1989 with the publication of a notice of intent (NOI) in the *Federal Register* (see Appendix C). On March 16, 1989, a scoping meeting was held in Mountain Home, Idaho. The subject of this scoping meeting was the relocation of the 35 TFW from George AFB to MHAFB. At that time, it was announced that there was a requirement to expand the SCR to support the increased training activities. The Air Force stated that when those requirements had been better defined, information on the range expansion would be made available.

On August 14, 1989, the original NOI (see Appendix C) was amended and additional scoping meetings were held between September 5 and 11, 1989 in four locations in southern Idaho (Boise, Twin Falls, Glenns Ferry, and Grand View). The focus of those scoping meetings was the proposed expanded range capability and supersonic flight activity. Updated information on the realignment was also presented.

In the interim period between the March and September scoping meetings, the Air Force held several public information meetings with a wide variety of special interest groups, issued press releases, and sent announcement letters to federal, state, and local government officials and civic leaders. A list of the issues raised in the September scoping meetings is contained in Appendix D. Based on the issues raised at the March scoping meeting and subsequent interaction with the public, the Air Force compiled the following list of environmental resources requiring analysis:

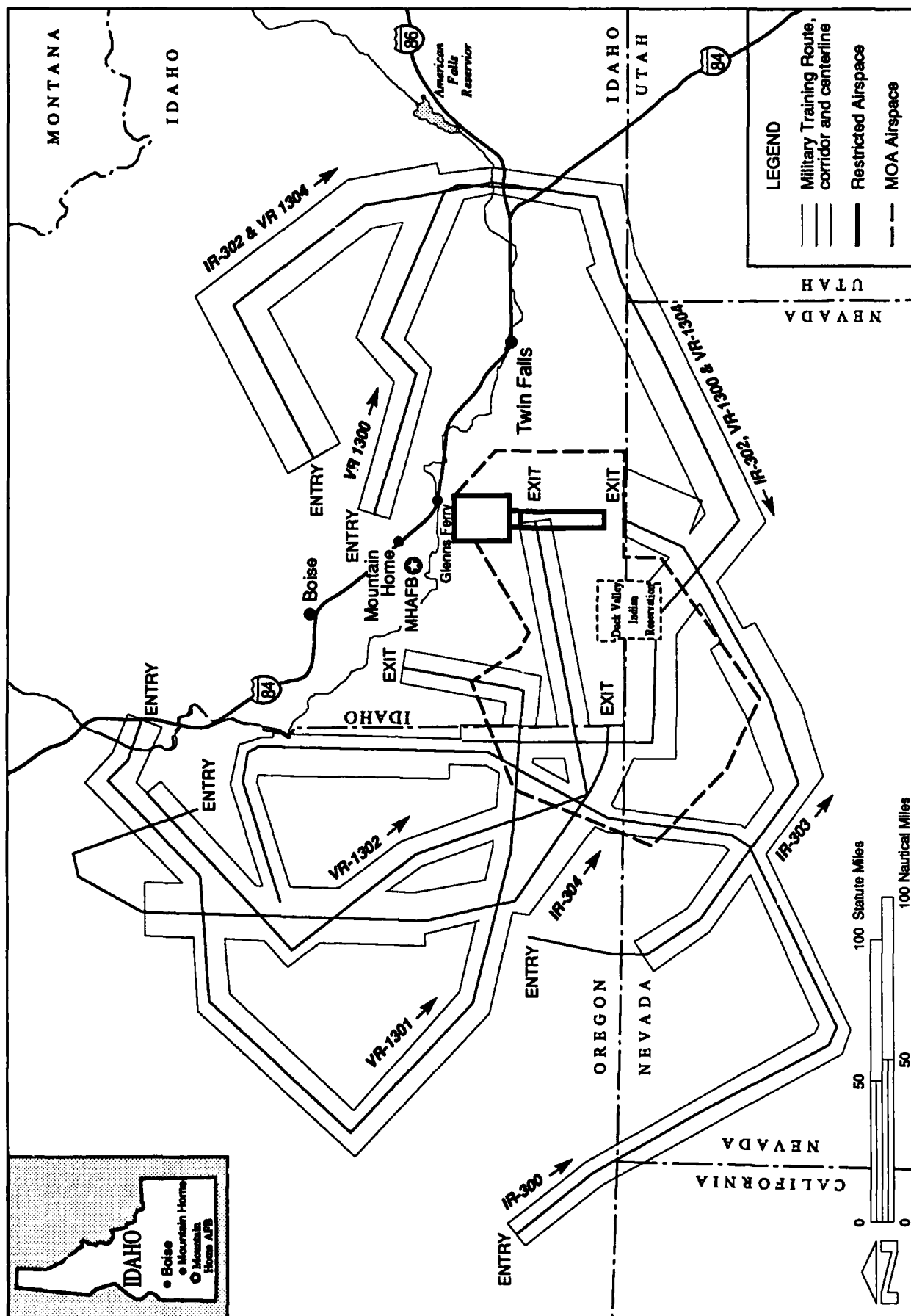


Figure 1.2-6

MILITARY TRAINING ROUTES ASSOCIATED WITH MOUNTAIN HOME AFB

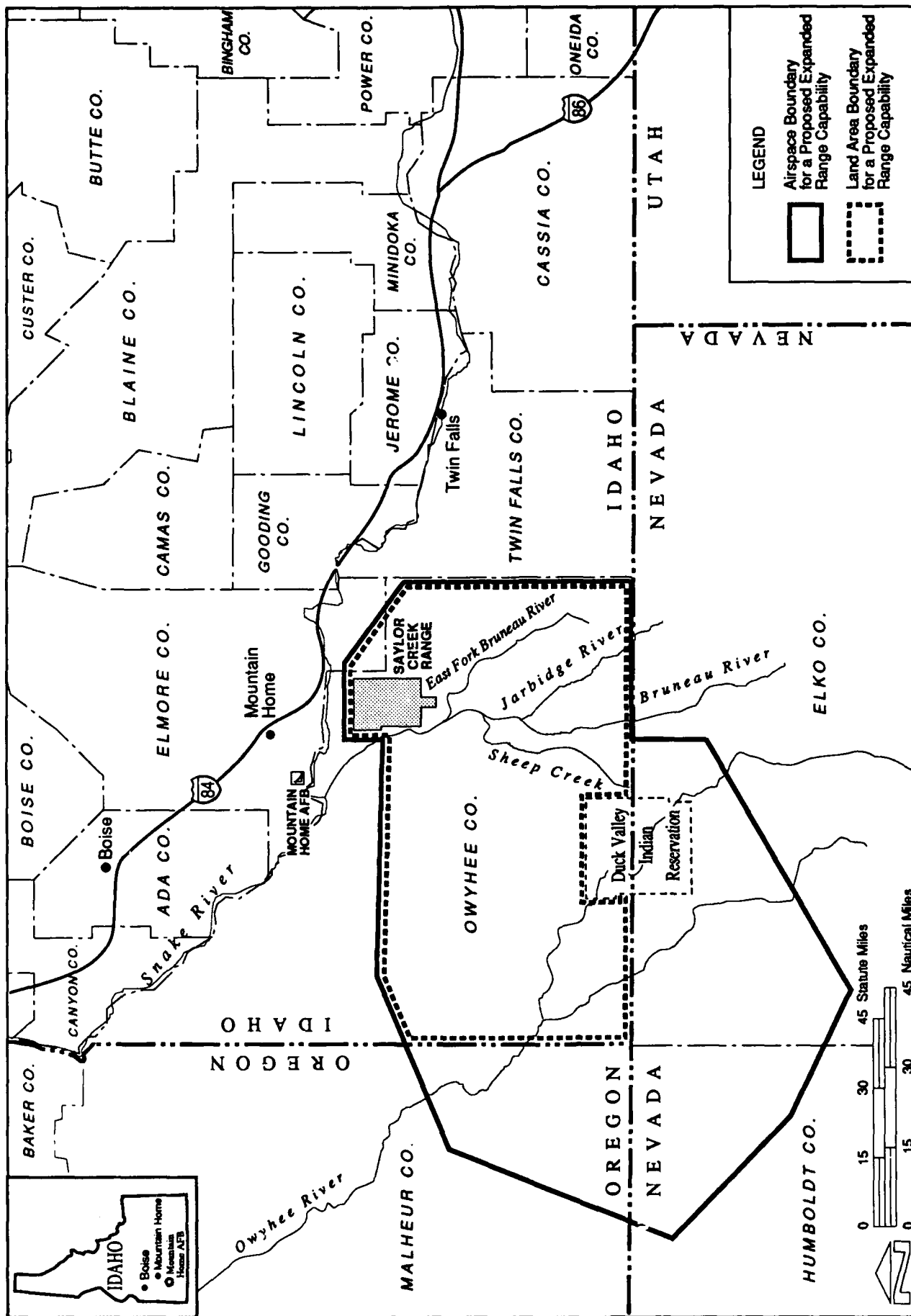


Figure 1.2-7
STUDY AREA FOR A PROPOSED EXPANDED RANGE CAPABILITY

- | | | | |
|---|----------------------|---|----------------------------|
| o | Airspace Management | o | Earth Resources |
| o | Air Resources | o | Land Use |
| o | Noise | o | Transportation |
| o | Biological Resources | o | Socioeconomics |
| o | Cultural Resources | o | Water Resources |
| o | Visual Resources | o | Safety/Hazardous Materials |

At the scoping meetings held in September, the Air Force announced that it would implement a two-tiered approach to the environmental analysis to evaluate the impacts of the realignment and the proposed expanded range capability. Further details regarding the Tier 1 and Tier 2 environmental studies are provided in section 1.1.3, Tiered Decisionmaking and Analyses.

1.4 RELEVANT FEDERAL, STATE, AND LOCAL STATUTES, REGULATIONS, AND GUIDELINES

This document was prepared in compliance with NEPA, PL 91-190 (42 USC 4321 et seq.), and implementing regulations (40 Code of Federal Regulations [CFR] 1500 et seq.) established by the CEQ.

This document also addresses the relevant sections of the Clean Air Act, Clean Water Act, Resources Conservation and Recovery Act, Wilderness Protection Act, Rivers and Harbors Act, Threatened and Endangered Species Act, National Historic Preservation Act, as well as state environmental laws and local regulations and ordinances. The above acts and regulations are discussed in the resources sections to which they apply (e.g., Biological Resources section discusses the Threatened and Endangered Species Act).

The purpose of this EIS is to assess the impacts of the MHAFB realignment and proposed expanded range capability. The draft EIS (DEIS) has been filed with the Environmental Protection Agency (EPA) and circulated to the public and concerned agencies for review and comment. Public hearings will be held to facilitate the public review process. In addition, written comments on the DEIS during the 45-day public review period will be addressed in the final EIS (FEIS).

BLM, a bureau within the Department of the Interior (DOI), and the Federal Aviation Administration (FAA) are cooperating agencies on this EIS. BLM's Boise District office has made significant contributions to this EIS by way of data inputs, the development of the document outline, and reviewing the document. The Boise District office's focus has been primarily on the proposed expansion of range capability, as BLM would be responsible for processing any potential land withdrawal request made by the Air Force after the completion of a Tier 2 EIS. Appendix E briefly describes the land withdrawal, rights-of-way, and land acquisition processes. This appendix is included for information purposes only; no specific land withdrawal will occur based on the results of the Tier 1 EIS.

2.0 DESCRIPTION OF ACTIONS AND ALTERNATIVES

2.1 THE ACTIONS

As described in section 1.0, the realignment of MHAFB results from the Base Closure and Realignment Act that was signed into law on October 24, 1988. One of the 86 installations selected for closure was George AFB, California. All of the F-4 units currently stationed at George AFB will be transferred to MHAFB, Idaho. To make room at MHAFB for the George AFB aircraft and personnel, it will be necessary to move 35 F-111 aircraft and associated personnel from MHAFB. These F-111s and personnel will be transferred to other units to better consolidate command and control of the F-111 fighter/bomber assets.

As an adjunct to this action, the Air Force has also proposed to expand range capability to provide the 117 fighter aircraft based at MHAFB after realignment with adequate training facilities, to accommodate many other user aircraft whose training requirements on the range have increased and will continue to increase in the future, and to integrate the training requirements of new aircraft and weapons systems.

2.1.1 Relocation of George AFB Assets to MHAFB

The transfer of assets from George AFB to MHAFB will involve 94 F-4E and F-4G aircraft and their aircrews and support personnel. This group is composed of the following squadrons and detachments:

- o 20th Tactical Fighter Training Squadron (TFTS) (German Air Force Training) consisting of 18 USAF F-4E aircraft;
- o 21 TFTS consisting of 30 F-4E aircraft;
- o 562 TFTS consisting of 12 F-4G and 7 F-4E aircraft;
- o 561 Tactical Fighter Squadron (TFS) consisting of 24 F-4G aircraft; and
- o Tactical Air Warfare Center, Detachment 5, consisting of three F-4G aircraft.

These units will be integrated into the newly formed 831 Air Division at MHAFB after realignment, consisting of the 366 TFW and the 35 TFW. The personnel associated with this action and other programs planned for the base between fiscal 1990 and 1992 are shown in Table 2.1-1 below.

Table 2.1-1

Realignment-Related Personnel Changes at MHAFB

<u>Personnel</u>	<u>Officers</u>	<u>Enlisted</u>	<u>Civilian</u>	<u>Total</u>
Arriving (A)	367	2,979	249	3,595
Departing (B)	201	1,375	75	1,601
Net Increase (A - B)	166	1,654	174	1,994

2.1.2 Relocation of MHAFB Assets

All 35 F-111A will be transferred from MHAFB to other units. The outbound personnel flow will be integrated with the inbound personnel flow to approximate current manning levels. A gradual increase in personnel will then occur from June 1990 to April 1991. The two affected squadrons are:

- o the 389 TFTS, consisting of 17 F-111A aircraft, will be deactivated and moved during October through December 1991; and
- o the 391 TFS, consisting of 18 F-111As, will be deactivated and moved during July through September 1990.

These two squadrons will be converted to F-4 units as the George AFB F-4s arrive at MHAFB.

The 23 EF-111 aircraft currently based at MHAFB will not be transferred. The configuration of the newly formed 831 Air Division at MHAFB after realignment is shown in Table 2.1-2. The number of additional aircraft based at MHAFB as a result of the realignment will be 59, for a total number of 117 fighter aircraft.

A loss of about 1,600 personnel authorizations associated with the transfer of F-111s and a corresponding gain of approximately 3,600 personnel authorizations associated with the transfer of F-4s from George AFB and other programmed changes will result in a net increase of 1,994 personnel authorizations (see Table 2.1-1). During the period when the F-111s begin to depart MHAFB and the F-4s begin to arrive, net personnel departures are not anticipated to exceed 250 due to many F-111-associated personnel filling the new F-4 authorizations.

Table 2.1-2**Aircraft Composition of 831 Air Division at MHAFB**

<i><u>Unit</u></i>	<i><u>Squadron</u></i>	<i><u>Number of Aircraft</u></i>	<i><u>Type of Aircraft</u></i>
366 TFW	389 TFS	19	F-4E/G
	390 ECS	22	EF-111
	391 TFS	24	F-4G
35 TFW	561 TFS	30	F-4E
	562 TFS	18	F-4E
	392 ECRS	---	---
DET3/DET5	---	3	F-4G
	---	1	EF-111

On-Base Construction to Support the Realignment

New construction and modification of existing facilities at MHAFB is planned to support the increase in aircraft and personnel. The facility construction projects range from military family housing to hangars and munitions storage. The projects, the fiscal year in which each will occur, and the type of construction (new, modification, or repair) are shown in Table 2.1-3. The proposed locations of these construction projects are shown in figures 2.1-1 through 2.1-4.

Planning for the construction projects was conducted by MHAFB engineering and planning staffs in accordance with guidance and standards established by Air Force directives. In late December 1988, MHAFB's Base Civil Engineer assembled a team of on-base staff with the functional expertise to develop the facility requirements needed to support the realignment of aircraft and personnel from George AFB. This team drew its guidance for siting new facilities from MHAFB's Long-Term Improvement Plan which, in turn, was developed in accordance with Air Force regulations for base comprehensive planning. The Long-Term Improvement Plan sets forth land use areas for the base (e.g., industrial, commercial, administrative, and residential). The sizing of facilities, new or modified, was done in accordance with Air Force standards for facility requirements.

Numerous siting factors were considered, including the general and specific guidance set forth in a variety of Air Force regulations governing the development of airfields; airspace; contaminated areas being investigated or remediated in accordance with the Installation Restoration Program (IRP); quantity-distance zones around explosives storage sites; AICUZ noise zones; an evaluation of existing facilities for contribution to or impact on the new functional uses; existing and projected traffic patterns and volumes; infrastructure demands; operational requirements; and functional relationships.

Table 2.1-3

REALIGNMENT-RELATED CONSTRUCTION PROJECTS ON MHAFFB

<i>Construction Project</i>	<i>Fiscal Year</i> ¹	<i>Type</i>	<i>Figure</i>	<i>Number</i>
Convert Bldg 278 to Squadron Operations	1990	Modification	2.1-1	1
Aircraft Engine Shop	1990	New	2.1-1	2
Munitions Magazine	1990	New	2.1-1	3
Taxiway "D"	1990	Repair	2.1-1	4
Fuel Fill Stand	1990	New	2.1-1	5
432 Units of Military Family Housing	1991	New	2.1-2	1
208 Person Dormitory	1991	New	2.1-2	2
Avionics Add-on to Bldg 1327	1991	Modification	2.1-2	3
Munitions Facility	1991	New	2.1-2	4
Radar Calibration Add-on to Bldg 1333	1991	Modification	2.1-2	5
Squadron Operations/AMU	1991	New	2.1-2	6
Heating Plant	1991	New	2.1-2	7
AGS/WRSK Add-on to Bldg 1361	1991	Modification	2.1-2	8
Squadron Operations Facility	1991	New	2.1-2	9
Aircraft Hanger	1991	New	2.1-2	10
Inert Munitions Storage	1991	New	2.1-2	11
AMU Add-on to Bldg 277	1991	Modification	2.1-2	12
Sewage Treatment Plant	1991	Modification	2.1-2	13
Flight Simulator Add-on to Bldg 840	1992	Modification	2.1-3	1
Armament Shop Add-on to Bldg 1225	1992	Modification	2.1-3	2
Supply Warehouse	1992	New	2.1-3	3
Squadron Operations Add-on to Bldg 272	1992	Modification	2.1-3	4
Washrack Corrosion Control	1992	New	2.1-3	5
Dining/Troop Issue	1992	New	2.1-3	6

Note: 1. Variation in construction schedules will occur due to fiscal funding.

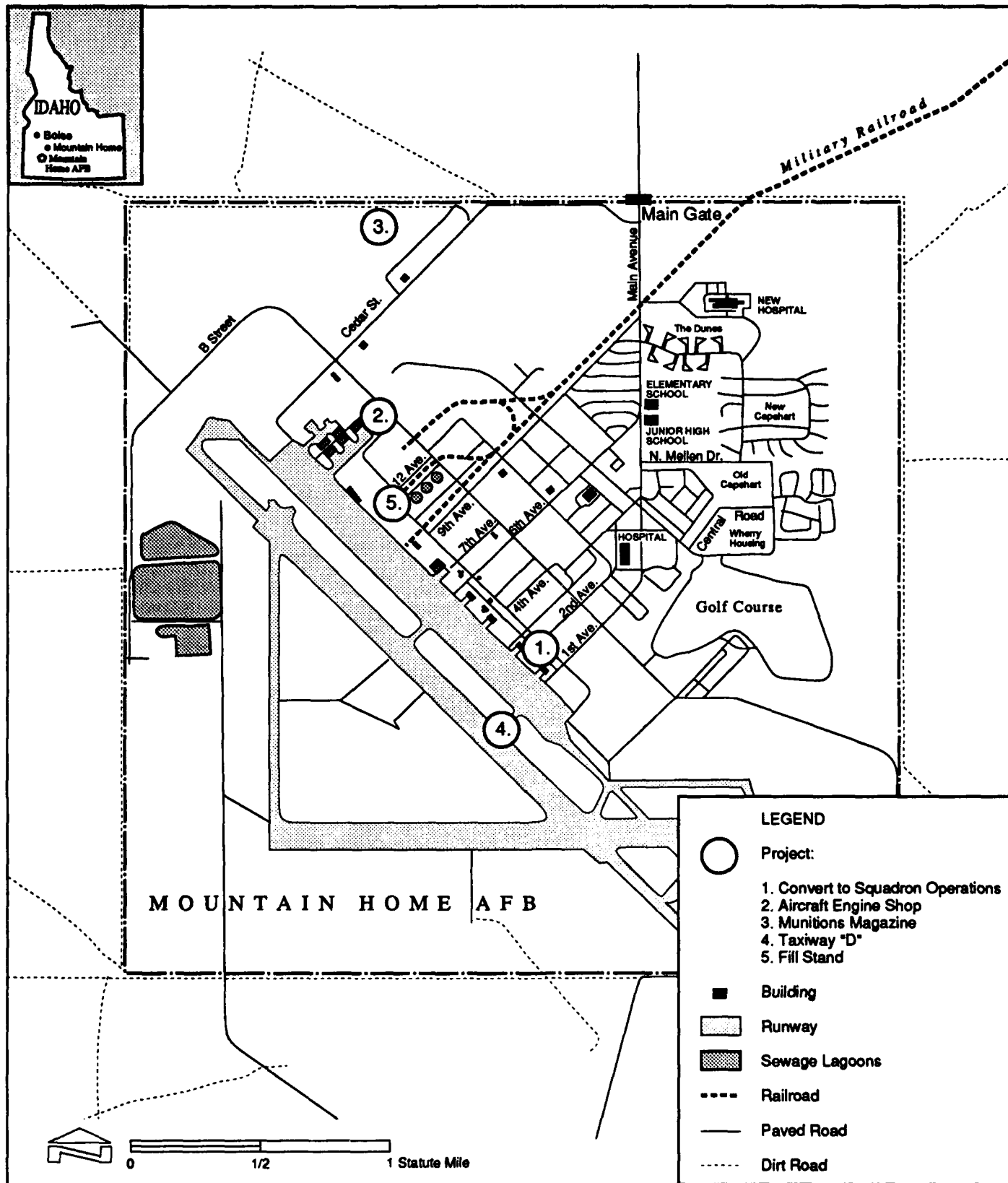


Figure 2.1-1

REALIGNMENT-RELATED PROJECTS FOR FISCAL YEAR 1990

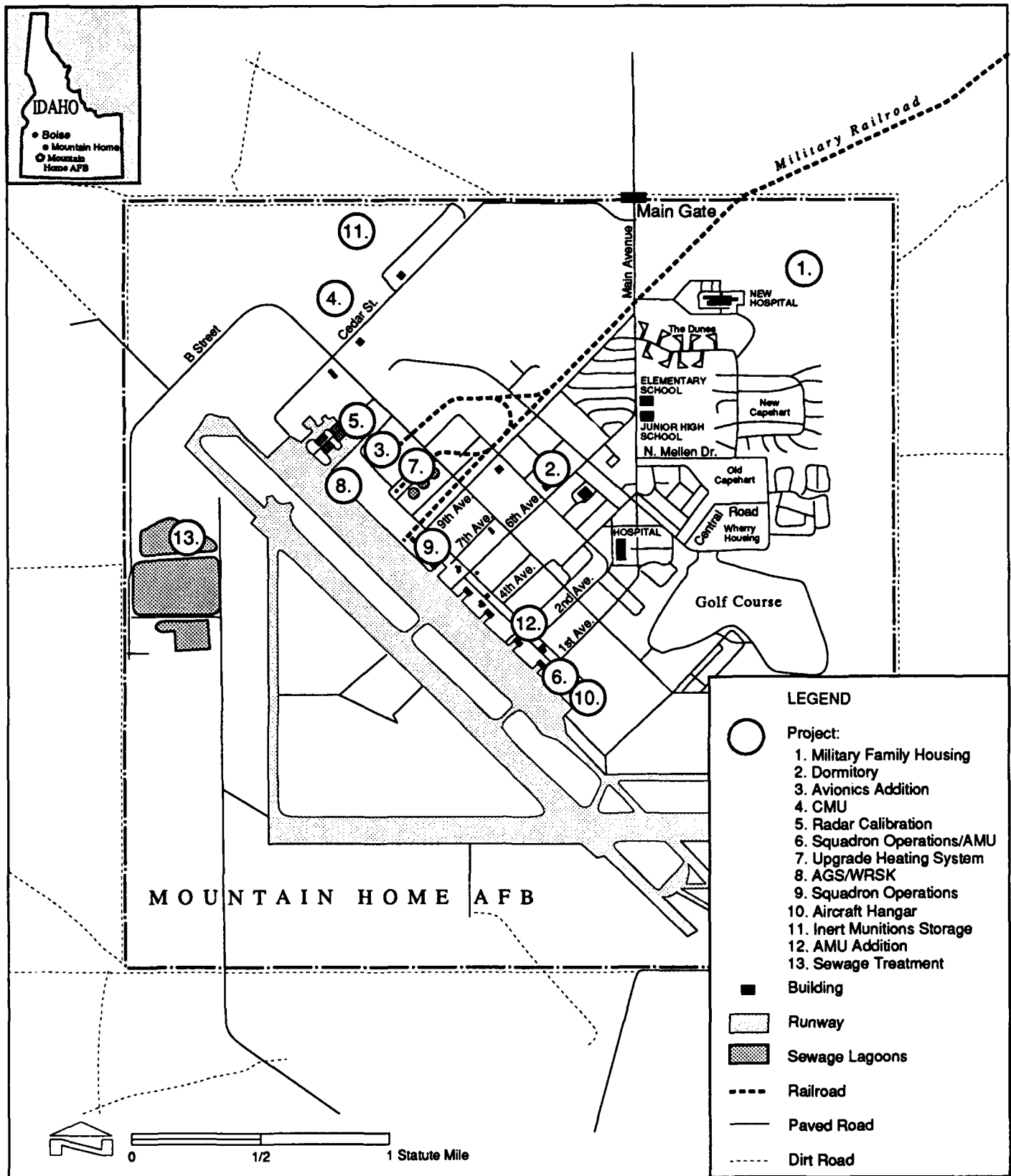


Figure 2.1-2

REALIGNMENT-RELATED PROJECTS FOR FISCAL YEAR 1991

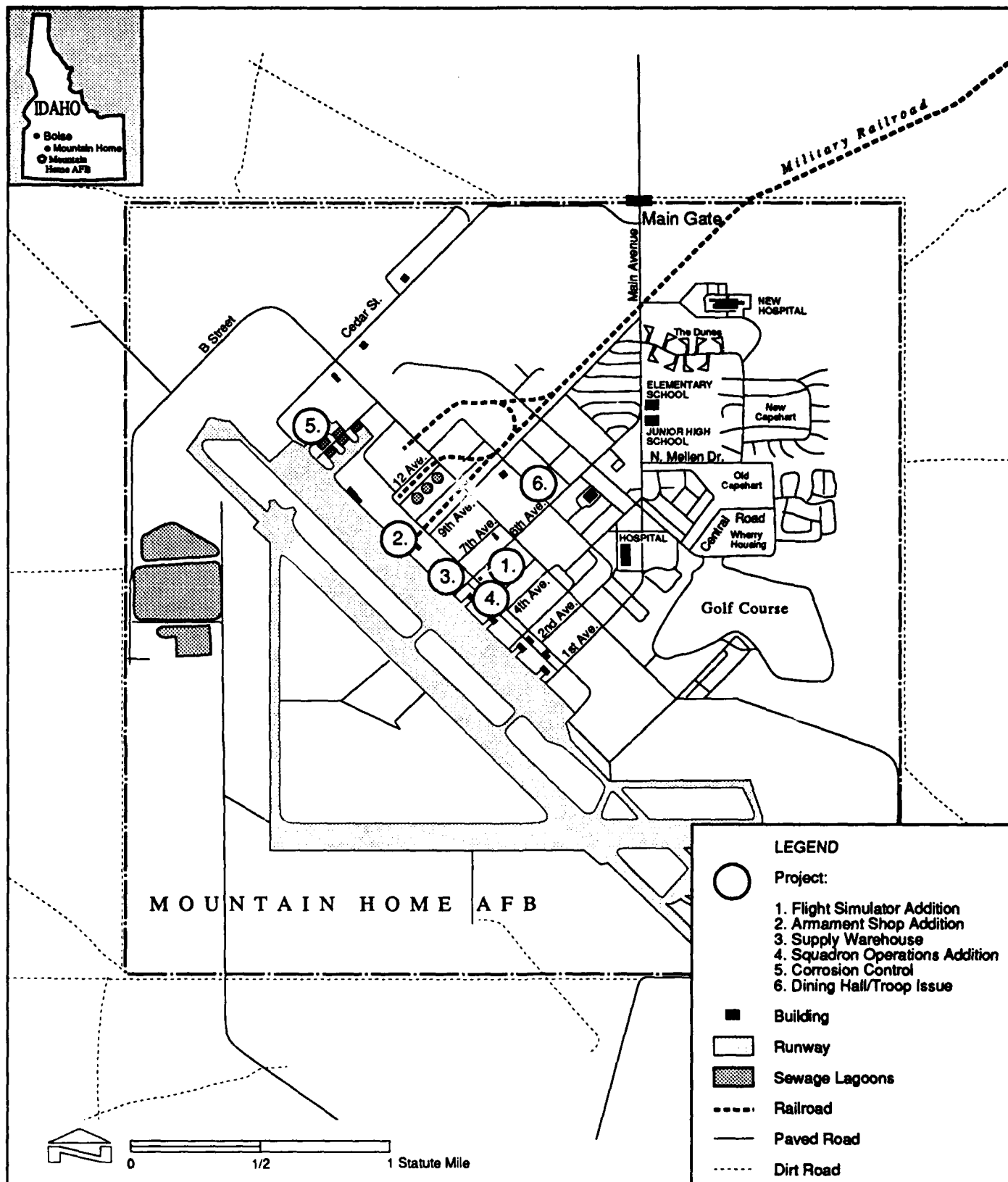


Figure 2.1-3

REALIGNMENT-RELATED PROJECTS FOR FISCAL YEAR 1992

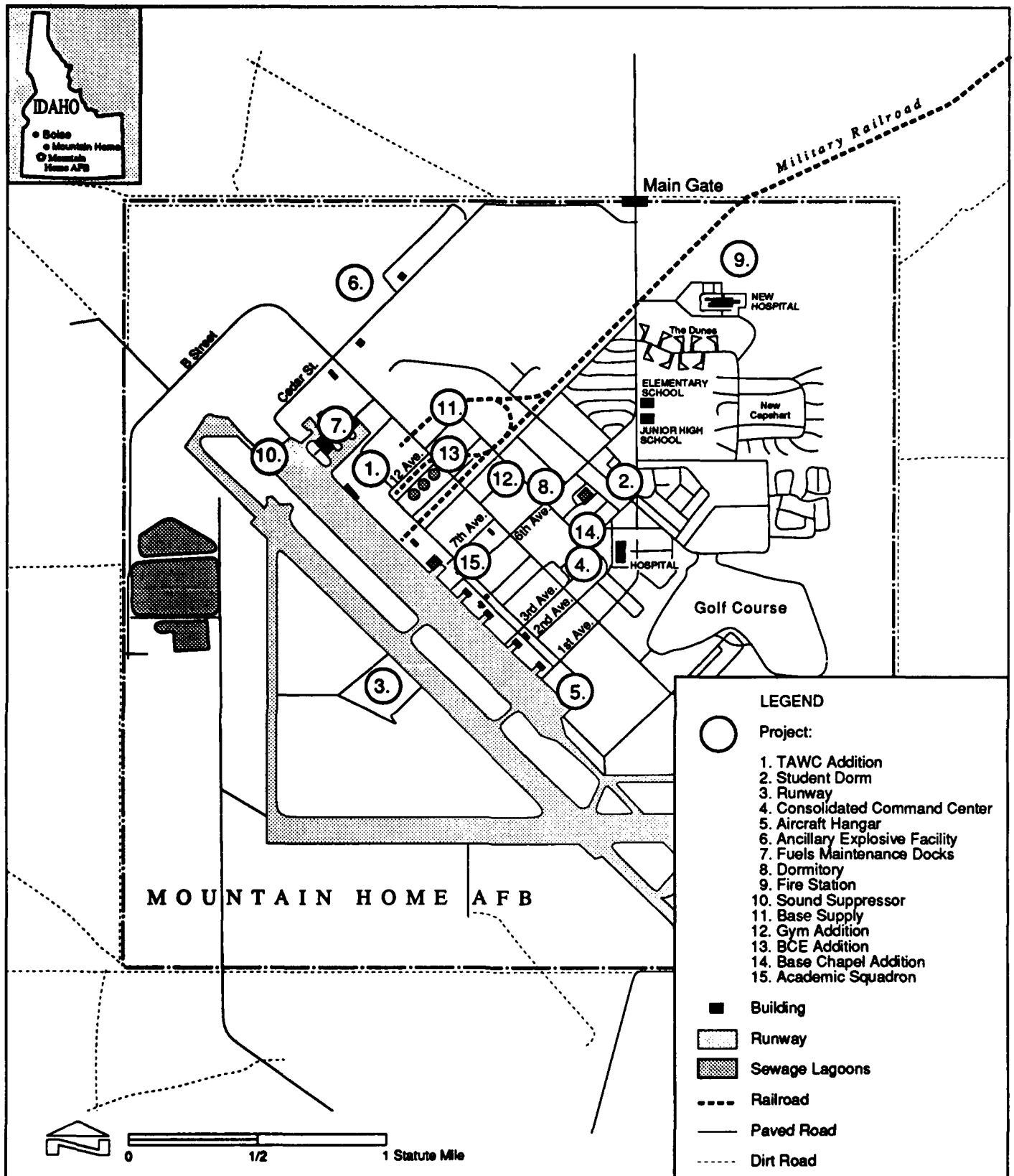


Figure 2.1-4
OUT-YEAR PROJECTS

Where possible, operational/functional groupings of facilities were established with consideration given to interface with existing compatible uses, consolidation with similar facilities where possible, spatial requirements, and physical limitations. Existing facilities that would be consolidated, displaced, and/or relocated to other sites were also evaluated. The goal was to build the most efficient and cost-effective operation.

The initial realignment planning process culminated in late January 1989 with a presentation made at MHAFB to HQ TAC's site-survey team. The site-survey team included, in addition to HQ TAC staff, representatives from Air Staff (Civil Engineering, Bases and Units) and from George AFB. The site-survey team validated the requirements set forth by the MHAFB team.

Eleven of the 24 construction projects included in Table 2.1-3 are modifications or repairs to existing facilities. The sites for these construction projects were predetermined by the location of each existing facility. Thirteen of the construction projects are new facilities. They are listed in Table 2.1-4, which also identifies the primary siting factors determining the proposed locations for each new facility.

Table 2.1-4

Siting Factors for Realignment-Related Construction at MHAFB

<u>New Facility</u>	<u>Adjacent to Existing Similar Facility</u>	<u>Adjacent to Flightline</u>	<u>Adjacent to Base Operations</u>	<u>Quantity- Distance Criteria</u>	<u>AICUZ Noise Criteria</u>
Aircraft Engine Shop	X	X			
Munitions Magazine	X			X	
Fuel Fill Stand	X	X			
Military Family Housing	X				X
Dormitory	X				X
Munitions Facility	X			X	
Squadron Operations/AMU		X			
Squadron Operations Facility		X			
Aircraft Hangar	X	X			
Inert Munitions Storage	X			X	
Supply Warehouse		X	X		
Washrack Corrosion Control	X	X			
Dining/Troop Issue	X				

2.1.3 Proposed Changes to Special Use Airspace

2.1.3.1 Introduction

The special use airspace currently used in the area surrounding MHAFB has supported training for TAC, SAC, and other DOD aircraft, including the Idaho Air National Guard (IANG). With the proposed realignment of George AFB's F-4s to MHAFB, additional demands that will require airspace changes will be placed on the special use airspace. The nature of the current operations include aircraft advanced handling, standoff electronic warfare training, and IANG RF-4 reconnaissance training.

Aircraft Advanced Handling Characteristics. This flight training is designed to give aircrews proficiency in and ability to exploit the flight envelope of the aircraft, consistent with operational and safety constraints. This training involves single aircraft only.

Standoff Electronic Warfare Training. This training concerns the use of aircraft equipment to jam simulated surface-to-air missile (SAM) and anti-aircraft artillery (AAA) sites. Mission profiles are based on providing electronic combat support for strike aircraft. The training includes the actual detection and disruption of the ability for ground-based SAM and AAA sites to function effectively.

Reconnaissance Training. This training consists of safely flying and navigating the aircraft at low altitude while simultaneously devoting attention to searching for and recognizing enemy aircraft threats. The training includes the performance of an obvious recognition/defensive maneuver in reaction to the enemy threat.

The addition of the George AFB's F-4s to the MHAFB special use airspace will put additional requirements on the airspace, which includes intercept training, air-to-air combat training (a requirement the F-111s now at MHAFB do not have), and supersonic operations.

Intercept Training. During intercept training, student F-4 aircrews need adequate time and distance to learn how the F-4 radar systems operate, to analyze the intercept geometry involved between the F-4 and a target aircraft, to maneuver the F-4 to successfully complete the tactical intercept, and to make appropriate adjustment to counter changes in geometry. During an intercept, when two fighter aircraft are flying toward one another at 500 mph each, their combined closing speed is 1,000 mph. Starting an intercept with aircraft 40 NM apart provides an aircrew with approximately 2 1/2 minutes to complete all of the necessary procedures and actions to successfully complete the intercept. The needed altitude envelope provides adequate vertical airspace to effectively practice three-dimensional aircraft maneuvering. The F-4 achieves optimum flight performance between ground level and 25,000 feet AGL.

Air-to-Air Combat Training. Air-to-air combat training (ACT) may include two or more aircraft. In ACT flying training, the aircrew practices and progresses from two-ship basic fighter maneuvers (BFM) to advanced multiple aircraft ACT. Any of the types of air-to-air training described above would be required for both fully mission-capable aircrews and formal training unit (FTU) squadrons. Air-to-air flying skills must be continually practiced to maintain optimum aircrew proficiency.

Supersonic Operations. Supersonic operations above 5,000 feet AGL are proposed for MOAs in Idaho. Tactics and flight operations to test aircraft handling characteristics require speeds in the transonic and supersonic regimes on a recurring basis. The EF-111As are "high value" assets in the Air Force inventory. There are a limited number of aircraft, and they serve a critical role in all Air Force tactical missions. The EF-111s, which are unarmed, jam threat radar associated with SAM and AAA sites. Their only means of escape from a hostile environment, whether operating at low-level (less than 1,000 feet AGL) or mid-level (5,000 to 10,000 feet AGL) altitudes, is to accelerate to supersonic speed. Presently, aircrews are unable to practice this maneuver in MHAFB special use airspace. The F-4s moving to MHAFB will also need to practice supersonic flight as part of their training. During basic fighter training, this aircraft can attain supersonic speeds while performing air combat maneuvers. These maneuvers allow the F-4 to acquire or evade adversary aircraft. Supersonic flight is also needed for functional check flights. These flights test operational capability of aircraft after a major overhaul.

2.1.3.2 Proposed Action

The proposed changes in the MHAFB MOAs will accommodate the additional airspace requirements needed to accomplish the training events of the aircraft assigned to MHAFB, in addition to IANG and SAC aircraft.

The realignment brings missions that place increased demands on special use airspace in the vicinity of MHAFB. After the F-4s arrive at MHAFB, the need for MOA airspace will increase by more than 7,500 30-minute MOA periods annually. Further, the IANG RF-4 unit projects a new requirement for more than 1,000 MOA periods beginning in 1990. This increased demand, along with the current EF-111 need for 1,000 MOA periods annually, dictates efficient use of existing MOAs and shows a need to modify the existing MOAs. The present MOA configuration cannot easily be subdivided into smaller subunits for simultaneous use by a number of users. Consequently, the present level of air-to-air tactical training achieved by F-4 aircrews at George AFB could be negatively affected. Similarly, degraded EF-111 training could result from limited MOA training time resulting from competition for MOA airspace. Several modifications and changes to the existing MOAs are required to provide needed flexibility to maintain current levels of aircrew training (see Figure 2.1-5).

In summary, the proposed changes include consolidating the existing eight MOAs into four MOAs, expanding MOA airspace north of the existing Owyhee/Paradise and Sheep Creek 3 MOAs and west

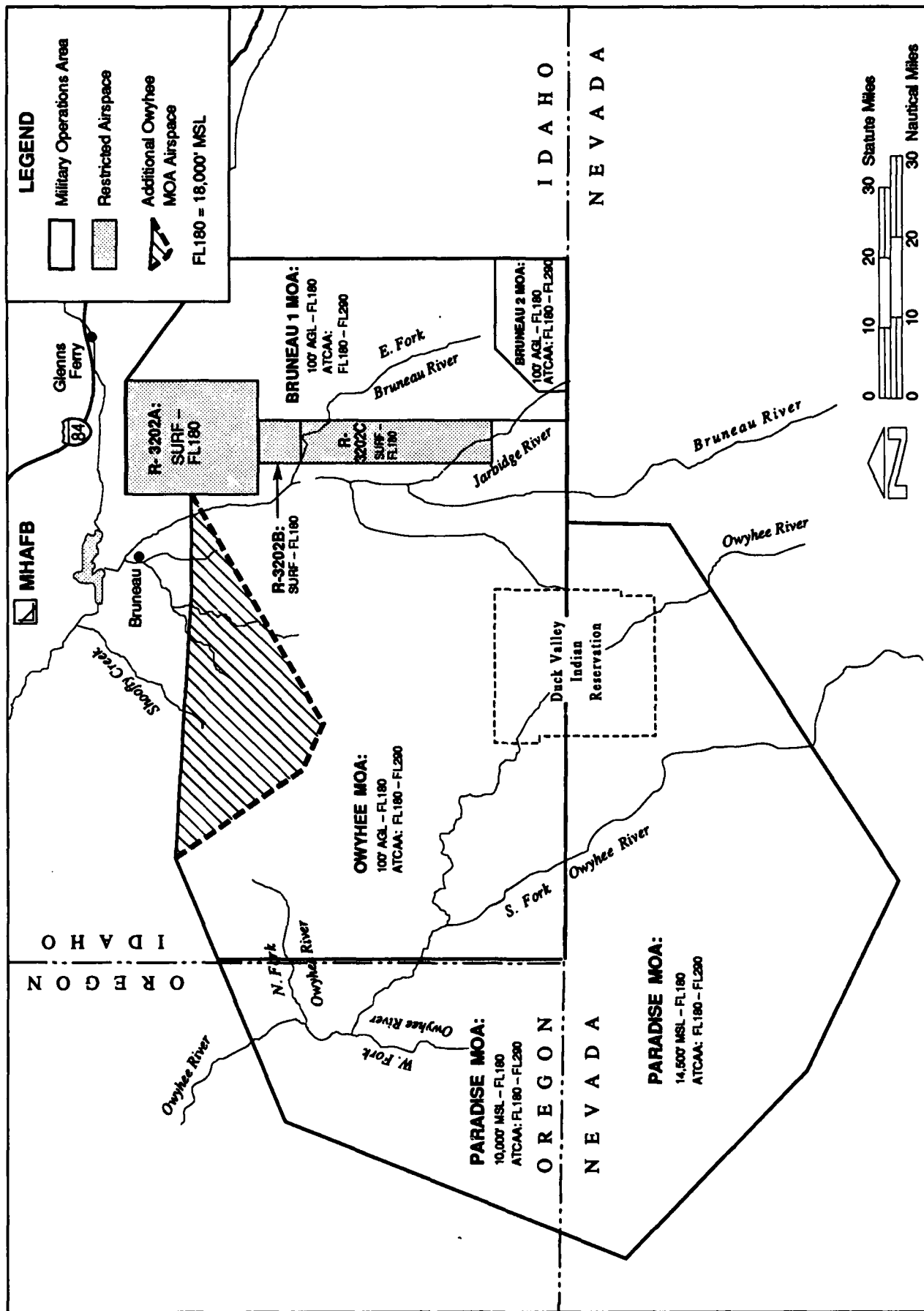


Figure 2.1-5
PROPOSED AIRSPACE CONFIGURATION

of the SCR, and lowering the floors of the Paradise MOA in Oregon and the Bruneau 2 MOA. Details of the proposed changes are described in section S4.1, Airspace Management. The MOAs in Idaho would be combined into three MOAs: Owyhee and Bruneau 1 and 2 MOAs. The floors of all MOAs in Idaho would be 100 feet AGL, in Oregon 10,000 feet MSL, and in Nevada 14,500 feet MSL. The ceiling for all MOAs would be 18,000 feet MSL. The ATCAA airspace would extend up to 29,000 feet MSL. Supersonic operations, above 5,000 feet AGL, will be conducted within the Owyhee and Bruneau 1 and 2 MOAs.

The proposed changes to the MOA airspace provide flexibility to easily subdivide MOA airspace, thus allowing further simultaneous use. Through maximum simultaneous use, all user needs as described in section S4.1, Airspace Management, could be met.

2.1.4 Proposed Expanded Range Capability

2.1.4.1 Introduction

The SCR historically has supported the training needs of TAC fighters and SAC bombers located at and near MHAFB, and the IANG. In recent years, the range has experienced a considerable increase in use by these units as well as requests for additional access from other units. This increased demand for SCR time along with a need for more realistic aircrew training has revealed serious limitations and deficiencies of the range. These deficiencies will be magnified in the short-term, immediately following the F-4 beddown at MHAFB.

The Air Force's short-term requirements will be over the next five years. In the short-term, the Air Force must satisfy the immediate training needs of aircrews stationed at MHAFB with only existing range facilities. The SCR is inadequate to meet the immediate needs of MHAFB, along with other users cited above. Therefore, in the intermediate-term the Air Force proposes to expand range training capacity to satisfy all potential military users in a realistic training environment.

Recent rapid changes in the geopolitical world order and subsequent evolutionary changes in the U.S. defense force structure make the long-term outlook difficult to predict. However, better, more realistic training for an expected smaller, better-equipped fighting force will be at a premium.

Short-Term (Present - 1995; Pre-Expanded Range Capability). The short-term Air Force requirements include all current user and post-realignment F-4 range requirements. However, the current range configuration results in a significant shortfall in range capacity and capability to meet Air Force requirements. In the short-term, MHAFB aircraft range requirements would exceed present capacity. Table 2.1-5 depicts the short-term range period requirements.

Table 2.1-5

PROJECTED SHORT-TERM ANNUAL RANGE REQUIREMENTS¹
(Stated in 30-Minute Range Periods)

<i>Unit</i>	<i>Aircraft</i>	<i>Conventional</i>	<i>Tactical</i>	<i>Tactical with EC</i>	<i>Total</i>
<u>MHAFB²</u>					
35 TFW	F-4	3,308	1,720	2,894	7,922
DET 3, 4443 TEG	F-4	---	---	72	72
DET 5, 4443 TEG	F-4	60	18	234	312
390 ECS	EF-111A	---	---	<u>525</u>	<u>525</u>
TOTAL		3,368	1,738	3,725	8,831
<u>Other Users³</u>					
124 TRG, IANG	RF-4C	---	775	1,444	2,219
388 TFW, TAC	F-16	8	15	15	38
419 TFW, AFRES	F-16	5	23	28	56
SAC	B1-B, B-52	<u>1,200</u>	---	<u>1,200</u>	<u>2,400</u>
TOTAL		1,213	813	2,687	4,713

Notes:

1. The data listed reflect the number of effective range periods required after normal expected attrition.
2. Units stationed at MHAFB would be given top priority for range utilization. The required capacity to accommodate the training needs of these units in the short-term is 8,831 annual 30-minute range periods.
3. Other users would be assigned lower priority for range utilization in the short-term. However, training requirements would be fully met in the intermediate-term after a proposed expansion of range capability is implemented (see Table 2.1-6).

Intermediate-Term (Year 1995 - 2000; Post-Expanded Range Capability). The Air Force goal is to provide substantial, realistic training for MHAFB-based aircrews as well as other primary users of the SCR. This training includes tactical and conventional bombing, air-to-air, electronic warfare, and composite force training. Further, new missions and new weapons systems would be accommodated within an expanded capability. Table 2.1-6 depicts the intermediate-term range period requirements.

Long-Term (Year 2000 and Beyond). In the next five to 10 years, the Air Force will be receiving new aircraft, systems upgrades, and new weapons with enhanced capability that may require further range capability expansion, redesign, or reconfiguration. Range utilization requirements for follow-on to F-4, F-16, F-111, and F-15 aircraft that are designed for air-to-surface missions are expected to have the same range needs as current Air Force aircraft with the same mission. The Air Force expects to continue to have a minimum of three squadrons of aircraft at MHAFB. Future aircraft assigned to MHAFB are anticipated to be air-to-surface aircraft that perform at medium and low altitude, in all weather conditions and at night, and employ weapons similar to those currently in existence. Additionally, it is anticipated that the use of the SCR by other users and for other missions will increase. Table 2.1-7 depicts anticipated annual long-term range period requirements.

Proposed Action. The proposed action is to provide MHAFB and the Air Force the ability to meet short-, intermediate-, and long-term training requirements in the region. This action may require adequate airspace and land to accommodate the continuation and basic flying training requirements as well as realistic flying training for all MHAFB aircraft and other Air Force users in order to maintain a credible deterrent fighting force. An expansion of the range capability in the area near MHAFB could satisfy these needs. As such, this document discusses criteria, need, and impacts of such an expansion. An expanded range capability should be designed to meet all short-, intermediate-, and long-term requirements.

2.1.4.2 Criteria for Developing Range Sites

The criteria described in this section provide an initial framework that will be used in the Tier 2 EIS if a decision is made to pursue a range expansion option. These criteria are applicable to the process of selecting an existing range to meet training requirements, as well as the development of a new or expanded range.

Air Force range design is based on operational requirements. In order for a geographic area to be considered a feasible site for a range, it must have certain attributes: special use airspace; DOD-controlled land; and proximity to a military airfield.

Special use airspace and DOD-controlled land are needed to meet the safety and security requirements associated with operating a training range. A military airfield is needed to support the aircraft using

Table 2.1-6

PROJECTED INTERMEDIATE-TERM ANNUAL RANGE REQUIREMENTS
(Stated in 30-Minute Range Periods)

<i>Unit</i>	<i>Aircraft</i>	<i>Conventional</i>	<i>Tactical</i>	<i>Tactical with EC</i>	<i>Total</i>
35 TFW, MHAFB	F-4	3,308	1,720	2,894	7,922
DET 3, 4443, MHAFB	F-4	---	---	72	72
DET 5, 4443, MHAFB	F-4	60	18	234	312
390 ECS, MHAFB	EF-111A	---	---	525	525
124 TRG, IANG	RF-4C	---	775	1,444	2,219
388 TFW, TAC	F-16	8	15	15	38
419 TFW, TAC	F-16	5	23	28	56
SAC	B-1B, B-52	<u>1,200</u>	---	<u>1,200</u>	<u>2,400</u>
TOTAL		4,581	2,551	6,412	13,544

Table 2.1-7

PROJECTED LONG-TERM ANNUAL RANGE REQUIREMENTS
(Stated in 30-Minute Range Periods)

	<i>Range Periods</i>
MHAFB aircraft	2,990
Other Tac aircraft	2,000
Air National Guard	1,500
SAC	3,600
Other users	<u>2,000</u>
TOTAL	12,090

the range. All locations with this combination of attributes can be considered as potential sites for a range.

Exclusionary Criteria. Once a site is determined to have the above attributes, its suitability can be assessed by the application of exclusionary and evaluative criteria. The initial stage of site selection is the application of exclusionary criteria. The exclusionary criteria for selecting a site for a range complex to meet the training and operational requirements of the MHAFB mission are as follows:

- o **ADEQUATE AIRSPACE.** As discussed in Section 1.1.2.2, the airspace required for a proposed expanded range capability is 150 by 50 NM. This is the minimum airspace required to perform both the basic aircraft maneuvers required of student pilots and the advanced air-to-air tactics that must eventually be mastered. This amount of airspace is also required for composite force training and to practice standoff electronic combat training.
- o **ADEQUATE LAND AREA.** In the case of a proposed expanded range capability, the size is determined by the requirement for the range to replicate the high-threat battlefield described and illustrated in Section 1.1.2.2. Such a range complex would fit within a 62-by-50-NM optimum area (see section 1.0 for a discussion of range complex sizing). These dimensions make it possible to achieve the required realism in training by allowing enough room for the placement of threat simulator systems and target arrays which together simulate actual battlefield conditions.
- o **PROXIMITY TO A MILITARY AIRFIELD.** As described in Section 1.1.2.2, proximity to a military airfield maximizes time on the range and minimizes fuel costs associated with accessing the range. A range within 150 NM of an airfield provides approximately 1 1/2 hours of flying training time for aircrews. The 150-NM distance to the range gives aircrews 30 minutes of tactical training prior to entering the range, 30 minutes of tactical flying training time on the range, and 30 minutes of tactical training while returning to the base.

Evaluative Criteria. Once sites have been assessed using the exclusionary criteria, evaluative criteria are applied to determine the most feasible alternatives. The evaluative criteria are based on the following four factors:

- o **COMPATIBILITY:** This factor refers to the degree to which the operational characteristics of the training requirements are compatible with the existing mission. This factor involves not only current use but includes overall compatibility with Air Force mission capabilities.

- o **CAPACITY:** This factor addresses the ability of the candidate range to accommodate the new training requirements without displacing existing missions. This factor can be evaluated by examining current utilization levels and the potential for growth.
- o **SUITABILITY:** This factor examines a site's ability to meet the technical and physical support needs dictated by the training requirements. This involves looking at the land area in terms of suitability of terrain for the placement of targets and the flexibility to devise alternative layouts. Criteria for evaluating land area suitability also include safety and security issues as well as potential conflict with existing land uses. Suitability also involves airspace issues such as conflicts with civil aviation and access to the range via low level training routes.
- o **ENVIRONMENTAL:** This factor includes environmentally sensitive areas and potential conflicts with the protection and use of these areas. Environmentally sensitive areas include national and state parks, monuments, and landmarks; critical habitats of endangered species; wilderness and wilderness study areas; and national and regional recreational areas.

Examples of evaluative criteria are discussed below.

Safety. Safety considerations for both Air Force and public operations are paramount in range design. Two key design considerations are safety in flight pattern design and safe boundaries for target impact areas.

Terrain. A range with expanded capability should be located in terrain that simulates a high threat battlefield scenario. This requires the flat to rolling topography suitable for airfield construction as well as the movement and staging of ground troops and armored vehicles.

Realism. Combat experience and studies have indicated that aircrew survival is greatly enhanced by realistic training. It is essential for student aircrews to complete training missions under the stress of highly sophisticated combat environments. This imposes a requirement for training realism that has implications on range complex design and training scenarios. Principally, training realism requires that the training ranges be designed to simulate an anticipated theater of hostilities and the offensive/defensive doctrines of possible enemy forces.

Multiple Land Use. The design of an expanded range complex should incorporate multiple uses of government land whenever possible. This is the ongoing Air Force policy today at the SCR, where 97,000 acres of the 109,000-acre withdrawal are available for public use. On a proposed range with expanded capability, all of the land inside any withdrawal that is not specifically fenced as a target

impact area would be available for other compatible uses. Whenever possible, shared and seasonal use would be permitted, even in training ordnance impact areas. This would allow hunting, grazing, and other compatible land uses to continue. Air Force implementation of multiple use allows the public maximum use of valuable government lands. Appendix B contains definitions for multiple, shared or seasonal, and exclusive land uses.

Impact on Existing Public Activities. Location, size, and use of impact areas on an expanded range must be planned to allow realistic training while minimizing effects on existing activities and risks to public safety. Further, proposals for supersonic sorties should take into consideration the use of land or airspace by the public. Operational altitudes available for supersonic flight must be low enough to accommodate realistic missions but still be compatible with effective air route traffic control and general aviation traffic. In addition, since ground sonic boom effects are proportional to the altitude of the aircraft above the ground, the minimum operational altitudes must be planned to allow realistic scenarios while minimizing the sonic boom effects on the public and environment beneath the airspace.

Impact on Civil Aviation. As required by Air Force and FAA regulations, a range with expanded capability should be located in airspace transited by few commercial airways and servicing limited established airports and general aviation traffic. The range complex should be sited to avoid and minimize the impact that military flight operations may have on other airspace users.

Impact on Population. An expanded range capability should be provided in an area that is sparsely populated so that the fewest number of people are affected by dislocation or noise resulting from flight training activity, including supersonic operations.

2.1.4.3 Potential Alternatives Including the Proposed Action

Some alternatives considered for meeting short, intermediate, and long-term range requirements include (1) using simulator training devices, (2) using the SCR in conjunction with other ranges within 150 NM of MHAFB, (3) using ranges beyond 150 NM of MHAFB, (4) temporarily using satellite operating locations, (5) utilizing inflight refueling of aircraft to reach ranges with adequate training capability, (6) building another range within 150 NM of MHAFB, and (7) expanding range capability in southwestern Idaho.

Using Simulator Training Devices to Fulfill Range Requirements. Currently, no simulators exist that simulate actual combat realism and dynamics of tactical combat. F-4E/G and EF-111A simulators have no motion, limited visual capability, and limited scoring capability. No tactical improvements or new F-4/EF-111 simulators are being developed. This alternative would not meet even minimum requirements.

Using the SCR in Conjunction with Other Ranges within 150 NM of MHAFB. The only range other than the SCR located within 150 NM of MHAFB is the Orchard Range. The Orchard Range is an artillery and tank training range controlled by the IANG. The impact area is too small to be used for aerial bombing. This alternative would not permit the Air Force to meet its training needs.

Using Ranges Beyond 150 NM of MHAFB. Since there are several ranges beyond 150 NM of MHAFB that could be used, one option considered was joint use by MHAFB aircraft and the managing unit. This alternative would involve higher economic and operational costs. However, on a limited basis, some Air Force range requirements could be fulfilled in this fashion. Figure 2.1-6 depicts alternative ranges and their associated airspace.

Under this alternative, aircraft would operate from MHAFB directly to and from joint use ranges with no requirement for inflight refueling. The problem encountered is the distance to these joint use ranges. The closest joint use range to MHAFB usable by F-4s is the Eagle Range at the Utah Test and Training Range (UTTR), which is 173 NM away. Due to the unrefueled range of the F-4, the 346 NM of round-trip travel would result in only 10 to 20 minutes of range utilization time for each sortie (see Appendix B). In this situation, the operational cost in relation to training derived would be prohibitive.

Further, the UTTR is already scheduled at near-maximum capacity and is not anticipated to have the capability to support all MHAFB training requirements. Because the UTTR is a prime testing range for Air Force weapons systems, the MHAFB training mission would not possess the priority to dislodge the UTTR's present mission. As a result, MHAFB F-4 aircraft would be able to gain only limited access to UTTR. Similarly, the Fallon Naval Air Station (NAS) range in Nevada is unable to support Air Force needs other than on a "catch as catch can" basis. Such a basis for necessary training is unacceptable. Nellis would have ranges available for use by the F-4Es and F-4Gs, but the 300-NM one-way flight would make it unusable without inflight refueling or deploying aircraft to Nellis AFB.

Three of the four F-4 squadrons being assigned to MHAFB are student FTU squadrons. An FTU squadron's mission is to provide initial qualification training for F-4 aircrew members. As such, a major portion of the training is conducted in a classroom environment or in a training device such as a simulator.¹ In the student environment, it is absolutely necessary to achieve maximum training on each mission. In an FTU, training flights start with the most basic tasks and methodically progress to the more advanced. This results in a complex sequence of training activities consisting of academics, training devices (e.g., simulators and mock-ups), and flights. Thirty-minute periods on a range are considered the standard minimum to allow a student to achieve the maximum training on each mission.

1. Training is scheduled according to the B Syllabus: 247 hours of classroom instruction and up to 53 hours of either cockpit familiarization, part task trainer, or simulator missions.

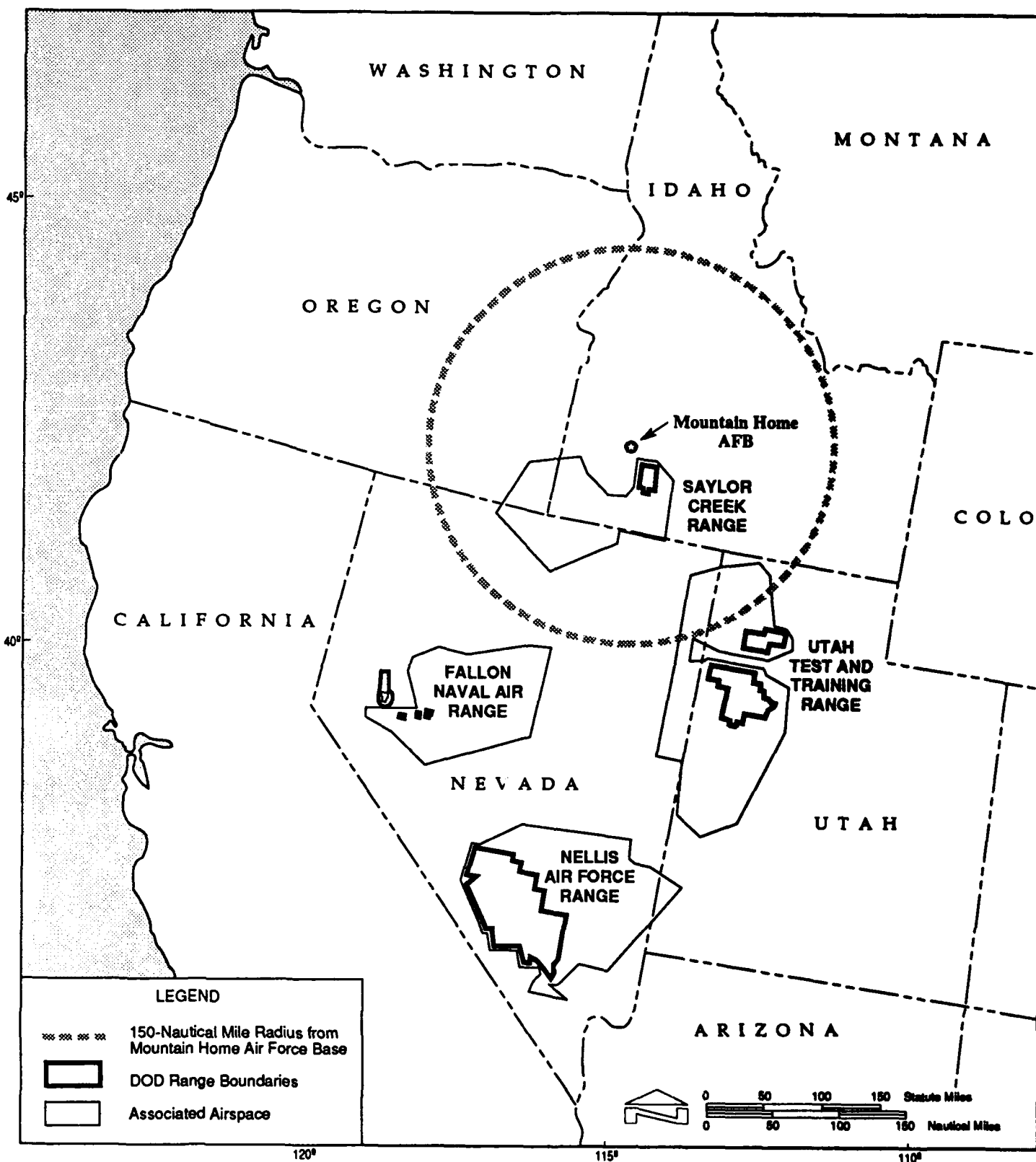


Figure 2.1-6
ALTERNATIVE RANGES AND ASSOCIATED AIRSPACE

Flying long distances to ranges such as UTTR does not permit maximum sortie effectiveness. Doing so would require up to a threefold increase in sortie production requirements. Such an increase would prohibitively increase fuel and maintenance costs and, at the same time, unacceptably degrade aircrew training production. Further, the requirement to fly at high altitude for optimum fuel conservation in order to reach distant ranges, reduces the ability to conduct required low-level training events. Consequently, much realistic training is lost flying to and from the range and at the range, for both the FTU student and the mission-ready aircrews.

Continuation combat training for mission-ready aircrews would be impacted in terms of aircrew proficiency and combat capability. Crew members would not be able to attain adequate proficiency if forced to fly long distances at high altitude and use an air-to-surface range for less than 20 minutes. To achieve the needed level of readiness would require up to a two-fold increase in the number of missions.

Temporarily Using Satellite Operating Locations to Obtain Range Time. The following analysis evaluates the feasibility of obtaining range times by one of two methods: (1) flying "out-and-back" sorties to Hill AFB, and (2) temporarily deploying MHAFB units to operating locations with access to ranges within 150 NM. Either of these options would be feasible on a limited basis for mission-ready aircrews, but not to the extent needed to absorb all unfulfilled requirements from the SCR after beddown of the F-4s.

Flying "out-and-back" sorties to Hill AFB would involve flying a mission to a nearby range (probably UTTR) and landing at Hill to refuel and reload munitions. The return trip would involve taking off from Hill AFB, flying another mission to the nearby range, and landing back at MHAFB. Hill AFB was chosen for this option because it is an Air Force installation with facilities in place that could handle recovering, reloading, and relaunching Air Force tactical aircraft. Further, Ogden Air Logistics Center (ALC) is co-located with Hill. Ogden ALC provides depot maintenance for F-4s and could provide some emergency F-4 maintenance if required. For these reasons, Hill AFB provides the best case for analysis.

MHAFB F-4Es and F-4Gs could operate on a limited basis using an "out-and-back" mission profile. A typical profile would be to fly at high altitude to UTTR (Wildcat Range) for 30 minutes of range activity and then land at Hill AFB. After landing, refueling, and rearming at Hill, the aircraft could fly a low-level navigation mission to arrive at UTTR with enough fuel (2,000 gallons) to use 10 to 20 minutes of range time.

An "out-and-back" scenario has several drawbacks that make this alternative infeasible on a large scale basis due to delays in aircrew training continuity and range time availability. Deploying to Hill AFB would be constrained by UTTR saturation and the priority of test missions. UTTR ranges are already

scheduled to near capacity and do not have the ability to absorb the additional eight hours per day range time needed solely for MHAFB F-4s.

Temporarily deploying units from MHAFB to obtain range time would entail stationing an entire squadron (aircraft, aircrews, and support personnel) at another operating location for up to 60 consecutive days. Nellis AFB was chosen as a suitable operating location because F-4G aircraft at George AFB currently use some of the Nellis ranges.

This alternative would be of limited value for the three FTU squadrons being transferred to MHAFB. FTU academic and simulator training to be provided at MHAFB is not provided at other locations. This training is to be spread throughout the course and must be accomplished.

To avoid the prohibitive expense of maintaining a complete on-site parts inventory, replacement aircraft parts would be maintained at MHAFB and transported to the operating location when required. In addition to increased transportation costs, the delay in getting parts from MHAFB would reduce aircraft in commission rates at the operating location. The wing's world-wide defense capability would be seriously degraded if the operational F-4G squadron deployed away from MHAFB on a long-term basis.

The adverse impact on the morale of Air Force personnel required to support this alternative is another factor that must be considered. While deployed to Nellis, families of operations and maintenance personnel would have to remain at MHAFB. The necessity for family separation is accepted in the military; however, the validity of forced family separation to accomplish air-to-surface training at a satellite location when that flying could be reasonably accomplished closer to MHAFB is questionable.

The following data summarize three major costs required to deploy and maintain an F-4 squadron (24 aircraft) at Nellis AFB. Cost estimates are based on deploying/maintaining a squadron-size detachment at Nellis AFB for one year with a rotation of personnel back to MHAFB every 60 days. A squadron-size operation requires approximately 300 enlisted and 67 officers for a total personnel package of 367. The total cost per year to accomplish this alternative is estimated to be \$2,071,262. The total includes deployment costs, temporary duty personnel costs, and personnel rotation costs. Computations used to derive both individual and total operating costs are provided in Appendix B.

Utilizing Inflight Refueling to Increase Area Flight Time. Aircraft from MHAFB could operate on a very limited basis to and from other ranges in the western United States such as UTTR, Fallon, or even Nellis AFB. Because of the greater distance involved, the operational cost per F-4 sortie to these ranges will be nearly twice the cost per sortie to the SCR. The additional costs are attributable to the increased F-4 flight time and the inflight refueling support necessary to accomplish sorties to UTTR,

Fallon, or Nellis. An F-4 sortie to the SCR requires a total flight time of 1.5 hours or less. A typical mission profile would include a low level training route mission followed by 30 minutes of activity at the SCR. In order to accomplish the same training (same profile) followed by 30 minutes of range time at UTTR, Fallon, or Nellis would require between 2.4 hours and 3.0 hours for a round trip.

Missions to the SCR can be flown without inflight refueling, while each sortie to UTTR, Fallon, or Nellis would require aerial refueling to and/or from the area to accomplish 30 minutes of range time. Five KC-135 refueling aircraft would be required per day. The total flight time for each KC-135 mission would average approximately five hours. Using current costs per flying hour, the cost per F-4 sortie for 30 minutes of range flight time at the SCR is \$4,123, whereas the UTTR cost per sortie would be \$8,497. A summary of these computations is provided in Appendix B. In addition to cost constraints, daily tanker support for MHAFFB missions is not feasible because of a lack of available tankers.

The additional costs resulting from F-4 operations at UTTR or Fallon using aerial refueling are acceptable on a limited scale since each mission-ready aircrew member must maintain refueling proficiency and each upgrading crew member requires aerial refueling training as part of the FTU syllabus. This training can be accomplished in conjunction with a range mission. However, an alternative requiring large-scale refueling support on a daily basis is impractical due to excessive cost, unavailability of adequate range time, and unavailability of adequate tanker support. Because Nellis is located 300 NM southwest of MHAFFB, aircraft would require refueling before and after using the range.

Building Another Range within 150 NM of MHAFFB. The area within a 150-NM radius of MHAFFB includes portions of western Oregon, northern Nevada, Utah, and most of Idaho, excluding the northern and eastern regions of the state. Figure 2.1-6 shows those portions of Oregon, Nevada, Utah, and Idaho within the 150 NM radius. A range located within 150 NM of MHAFFB would be economically and operationally feasible for aircrew training. In addition, since much of this area is sparsely populated, a range with expanded capability could be developed at several locations without adversely impacting major population concentrations. However, many potential locations are restricted, as explained below.

NORTH. Locating a range within 150 NM north of MHAFFB would place target areas in mountainous terrain including the Sawtooth Range, encompass a large amount of private land within the suitable terrain available, and conflict with at least five airways: V253, V4, V293, V330, and V444-500.

SOUTH. Developing an expanded range capability south of the SCR appears feasible. Further studies will be conducted in Tier 2 if the decision is made to continue range expansion plans.

EAST. This option would place target areas near Buhl, Jerome, Twin Falls, Kimberly, Gooding, Wendell, Shoshone, Castleford, and other towns. Other factors include Interstate Highway 84, Highway 93, and other major roadways, the Snake River, a power plant, and power lines. Also, it would interfere with airports at Buhl, Jerome, Twin Falls, Gooding, and others. Additionally, there are at least five airways traversing the area. They include V253, V293, V4, V484, and V444. This option would affect a large amount of private land and conflict with a numerous established population areas and facilities.

WEST. This option would place targets in the vicinity of the Snake River and into eastern Oregon. Building a new range in southwestern Idaho west of the current range and Highway 51 is viable. However, this option would disrupt the integrity of the needed scenario (see section 1.1.2.2) since the target areas would be geographically separated by land not owned or controlled by the Air Force. Essentially, the Air Force would have to operate two separate ranges at already increased cost. In addition, there are numerous airways traversing the area in eastern Oregon located within 150 NM of MHAFFB. Consequently, locating an expanded range capability in eastern Oregon and the Snake River is infeasible.

As indicated above, locating a large contiguous range and developing new MTR, MOA, and restricted airspace in most areas within 150 NM of MHAFFB is not feasible due to potential conflicts with civil airspace, unsuitable terrain, and the need for realistic training. The most feasible location for an expanded range capability is the southwestern portion of Idaho, where existing airspace is available.

Expanding Range Capability in Southwestern Idaho. Under this alternative, an ideal area of up to 62 by 50 NM would contain elements of a range complex to be used by the Air Force as described in section 1.0. Such an Air Force range complex could include the approximately 110,000 acres that constitutes the SCR. The ground area under study for expansion is identified in Figure 2.1-7. The expansion area could be contiguous with the SCR. This proposal best satisfies the Air Force's short- and intermediate-term requirements and the criteria set forth to meet those requirements. Additionally, this proposed expanded range capability would establish the flexibility to accommodate unknown long-term requirements. The proposal would provide the capacity to accommodate the approximately 13,600 required 30-minute range periods and the flexibility for joint use. No conflicts with established civilian airways exist. The area is sparsely populated, which allows flexibility and has minimal effect on existing civilian activities. Realism, particularly within the tactical/electronic combat ranges, would also be satisfied.

A 1987 analysis of war fighting skills conducted within TAC revealed the training most needed was practicing real-world tactics and threat reactions (see Appendix B). TAC aircrews were asked what areas of their training environment they considered to be less than adequate. The area most cited was reactions to threats, either physically moving the aircraft, or using some type of countermeasures. To

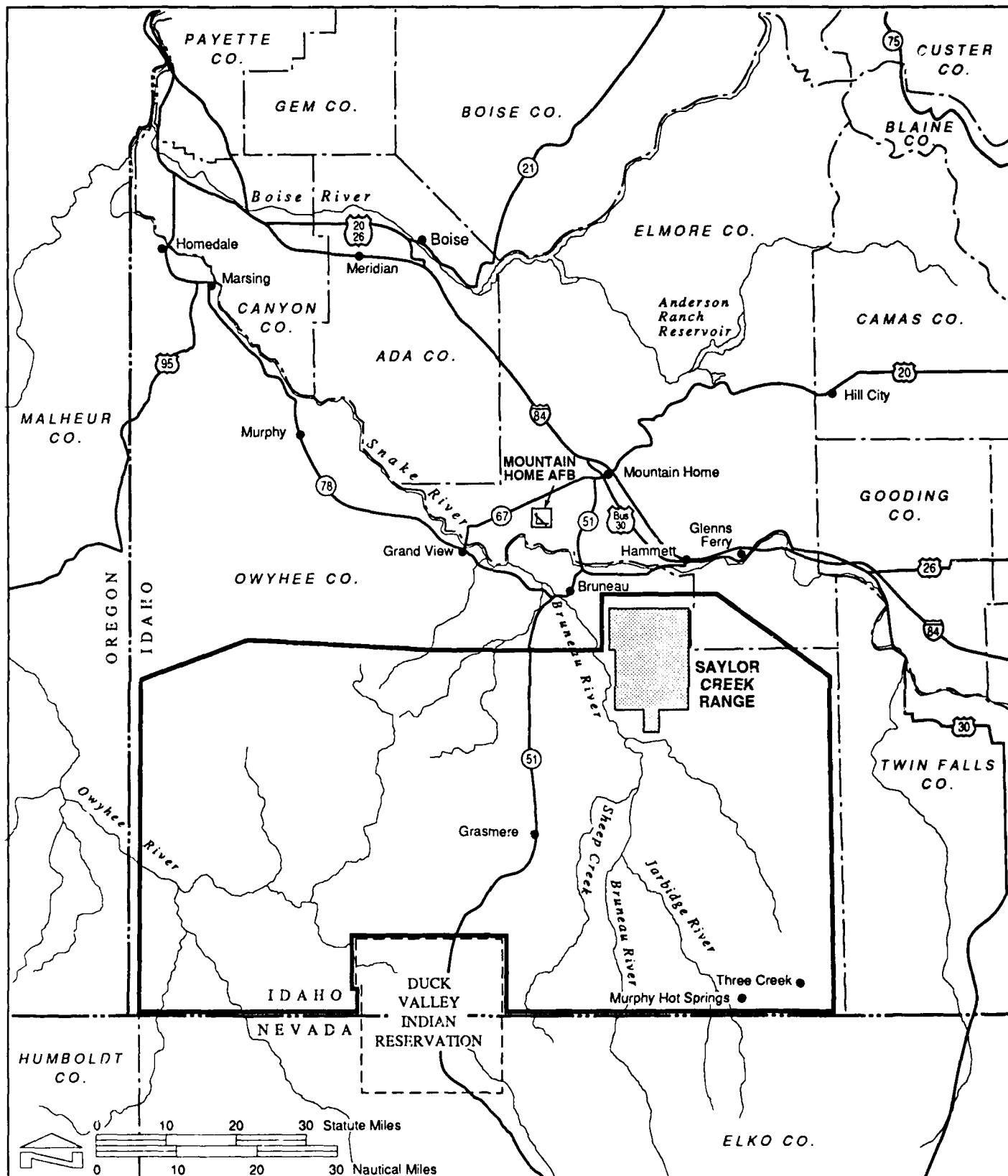


Figure 2.1-7

STUDY AREA FOR PROPOSED EXPANDED RANGE CAPABILITY

survive in high-threat environments, aircrews require regular practice in an environment as close to real combat as possible. In such an environment, aircrews are required to sort through numerous threat signals, determine the most threatening and the most appropriate reaction among several possibilities, then perform the reaction. All this must take place within a split second while staying in flight formation, navigating (often at low altitude), finding the target, and attacking it successfully. An expanded range capability could provide the space, with the variety of targets, and the spatial relationships needed to conduct this type of necessary realistic training.

Considering mission needs both present and future, an expansion of range capability in southwest Idaho best meets established criteria and best satisfies overall Air Force requirements.

2.1.4.4 No-Action Alternative

Introduction. The realignment of F-4 aircraft to MHAFB was recommended by the Commission as one of a series of actions designed to increase operational efficiency and thereby decrease operational costs throughout the DOD. F-4 aircrews must continue to fly on a range and use its associated airspace for their training. In order for the F-4 aircrews based at MHAFB to meet their air-to-air training requirements, the MOA changes described in section 2.1.3 will be necessary. Under the no-action alternative, an expanded range capability would not be available, and aircrews based at MHAFB would have to utilize current range capability.

Impact of Not Modifying the Special Use Airspace. The aircrews to be stationed at MHAFB would not be able to complete their required air-to-air training requirement if the special use airspace is not modified as proposed. The existing area is not large enough to accommodate a net gain of 59 aircraft. The expansion of the airspace is required for F-4 aircrews to practice intercept training and prevent overcrowding of the existing airspace. The reorganization of the existing MOAs is to enable the airspace to be better utilized. Failure to reorganize the MOAs will result in inefficient utilization of the available airspace.

Supersonic operations is another training requirement that could not be met if the special use airspace is not designated for supersonic operations. Without the ability to practice flight operations in a supersonic mode, aircrews would not be able to stay current in all of their required mission roles.

Training Scenarios Without an Expanded Range Capability. The SCR is the only usable range within 150 NM of MHAFB and does not, in its present configuration, possess the needed capacity for the short-, intermediate-, or foreseeable long-term training needs for Air Force aircrews. Further, the small size of the SCR does not permit required scenario development and the conduct of realistic CFT.

To identify a means by which the range could be used without acquiring additional property, a scenario was developed in which the existing target area would be reconfigured into an eastern and western half. Pilots would ingress the range from the south and would turn east or west as they left the range (depending on which side of the range they were on) after dropping practice munitions on the targets. This would effectively double the current range's capacity without requiring any additional land. The two parallel courses would be scheduled differently in order to separate the aircraft as much as possible. However, since most of this training would involve student pilots who are learning how to operate the aircraft, their timing would not be precise. In a worst case scenario, it is possible that two student aircrews could end up flying parallel to each other on courses 300 feet apart at 450 miles per hour. Training in this scenario is still under study.

In addition to the operational and safety difficulties mentioned above, the limitations imposed by this range configuration (e.g., the obvious requirement for the pilots to pull out from every delivery on the targets in a sharp left or right turn) would substantially degrade training realism.

In the short term, the SCR does not possess sufficient range capacity to meet all Air Force training requirements. Therefore, except when absolutely necessary, users based at MHAFB should receive priority for using the SCR. Other regular SCR users will be required to train elsewhere until a proposed expanded range capability is implemented. Other user training will be negatively impacted. However, even with priority, MHAFB F-4 and EF-111 aircrews cannot satisfy their continuation and basic training requirements on the SCR. MHAFB requirements can be partially satisfied using "work-arounds":

- o **EXPAND RANGE OPERATING HOURS.** Current projections on requirements are based on range utilization of 12 hours per day. Expanding daily usage would provide some additional range periods. As an example, using the range 16 hours per day instead of the current 12 hours (during long daylight days) would provide an additional 600 range periods per year. This solution does not fulfill all requirements and does not address the Air Force need for realistic training. Further, working longer hours could negatively impact aircrews through fatigue and lowered morale.
- o **TRAIN WITH NO WEAPONS DELIVERY.** Some F-4E/G and EF-111 tactical with electronic combat requirements could be accomplished in one of the overlying MOAs (airspace permitting) but with reduced training achieved. Under this scenario, some training that normally ends with an F-4G weapons delivery would be conducted "dry," conducting all the tactics but not releasing a weapon. These missions could be conducted against electronic combat emitters located on the SCR but at an altitude and distance that would provide safe clearance from aircraft flying on the range. Also, additional emitters could be placed at various locations in the MOAs where

there are no emitters today. Using this action, an estimated 2,011 F-4G range periods and 525 EF-111 range periods could be accommodated, but with significant trade-offs in training. Not only is continuation training reduced, realism is further degraded by not releasing a weapon.

- o **USE AIR REFUELING AND DEPLOYMENTS.** In addition to the work-arounds mentioned above, the Air Force could use air refueling, out-and-backs, and deployments on an interim, limited basis to fulfill training needs, all with detriments to training. Table 2.1-8 represents estimates of other possible range use using these schemes. The operational and economic costs are detailed in the previous section.

Table 2.1-8

Projected Annual 30-Minute Range Periods Available at Other DOD Ranges

<u>Nellis</u>	<u>Fallon NAS</u>	<u>UTTR</u>	<u>China Lake</u>	<u>Other</u>
1,000	350	350	100	200

Environmental Impacts of the No-Action Alternative. In contrast to the environmental impact analysis of the realignment, a no-action alternative to a proposed expanded range capability must be addressed. The environmental impacts associated with no-action are addressed in Chapter S-4 at the end of the impact assessment section for each environmental resource. Since no action means no expansion of range capability, the environmental impacts of the no-action alternative are assessed with respect to flight operations required to train using a reconfigured (split between east and west halves) target area. This represents a worst case analysis since the concentration of flights into a very small area maximizes potential impacts. If a new range were developed or the existing range were expanded, the separation of targets would be much greater and many of the impacts would be lessened.

Potential impacts resulting from work-arounds to other ranges would normally be expected to occur from aircraft emissions and noise. Given the number of range periods planned for these ranges (see Table 2.1-8) -- an average of less than two per day at Fallon NAS, UTTR, and China Lake Naval Weapons Station -- and the extremely high level of flight activity at these ranges (especially Nellis AFB), there would not be a substantial change in existing conditions. Consequently, the noise and air quality impacts would be insignificant. This conclusion is based on comparisons of the existing operations at these ranges, current MTR utilization, and MOA activity compared to the small increase caused by flight operations from MHAFB.

M3.0 AFFECTED ENVIRONMENT: MOUNTAIN HOME AIR FORCE BASE REALIGNMENT

Mountain Home Air Force Base has had a long history that began early in World War II. Originally designated Army Air Base, Mountain Home, the base was established in 1942 and officially opened in 1943. At that time, the northwest-southeast and east-west runways were constructed (Corbyn 1988). In addition, the Army acquired 420,000 acres south of the Snake River to establish the Saylor Creek Bombing Range.

Throughout the war, various bombardment groups and wings were stationed at the base and used the range. B-17 and B-24 propeller-driven bomber training predominated during this period, although some P-38 and P-63 pursuit training also occurred. At the end of the war, the base was deactivated.

MHAFB was reactivated as a SAC base in 1949 with B-29 bombers. Reactivation involved refurbishment of buildings, roads, and facilities as well as construction of new utilities (e.g., water mains). Between 1949 and 1959, the base housed reconnaissance squadrons, Military Air Transport Service wings, and bombardment wings. Extensive construction of housing, warehouses, barracks, utilities, and runways occurred during this period. Many of the base buildings and facilities date to the 1950s.

In 1960, SAC added some B-47 bombers, constructed three Titan missile complexes off base, and placed them under the control of a strategic missile squadron; the missile complexes were deactivated in 1965. During this period, the Air Force returned over 300,000 acres to the BLM as excess to their training requirements. The SCR was reduced to its present 110,000 acres.

TAC assumed control of the base and range in 1966. TAC initially used MHAFB and SCR for RF-4 reconnaissance and tactical fighter training. In 1972, the F-111 fighter-bomber arrived and the jet bombing training mission expanded. About 10 years later, the EF-111s arrived at the SCR with an electronic jamming training mission. Further on-base construction has occurred during the 1980s.

In this EIS, existing conditions and potential impacts related to the realignment of MHAFB are presented in chapters that begin with "M." Likewise, chapters pertaining to the proposed expanded range capability begin with "S."

M3.1 AIRSPACE MANAGEMENT

M3.1.1 Definition of Resource

Airspace management is defined as the management of that volume of air that covers the geopolitical borders of the United States, extending from ground level to infinity. There are two categories of aviation activities within the United States: controlled and uncontrolled. Within these categories, airspace is developed and further designated to identify its primary use.

M3.1.2 Region of Influence

The region of influence (ROI) in the vicinity of MHAFB is composed of several developed airspace areas with differing primary users. Civil and military aircraft use these areas when operating to and from MHAFB or when passing through the MHAFB ROI.

M3.1.3 Existing Conditions

The existing airspace environment associated with flight activity at MHAFB consists of several different airspace designations. This environment includes airport traffic control (ATC) services for aircraft operating at MHAFB, and radar approach control services. Mountain Home Approach Control serves instrument flight rule (IFR) and visual flight rule (VFR) aircraft operating to or from the various airports in the vicinity of the base or en route through the Mountain Home area.

By definition, controlled airspace includes control zones, airport radar service areas (ARSAs), terminal control areas (TCAs), transition areas, control area, continental control area, and positive control area. The elements applicable to aircraft activity at MHAFB are a control zone, transition area, and control area. In addition to these three elements, section M3.1.3.1, Controlled Airspace, provides a brief discussion of the MHAFB Approach Control area, which is airspace where en route aircraft arriving or departing the air base terminal area are provided ATC services.

Special use airspace (SUA) is airspace wherein activities must be confined because of their nature or where limitations must be placed on non-participating aircraft operations because of those activities. SUA can be both uncontrolled and controlled airspace. Thus, aircraft operating in SUA are bound by rules and regulations not only applicable to SUA but by those applicable to any other airspace category. For example, pilots may not enter a prohibited or restricted area without advance permission or authorization of the controlling agency, even if the area lies within uncontrolled airspace. Two restricted areas interact with MHAFB's terminal airspace environment.

Other airspace associated with MHAFB includes an airport traffic area (ATA). ATAs are established at airports with an operating control tower and, unless otherwise specified, consist of airspace within a radius of 5 statute miles of the airport center. An ATA includes altitudes from the surface up to, but not including, 3,000 feet AGL.

Uncontrolled airspace is not designated as continental control area, control area, control zone, terminal control area, or transition area. Uncontrolled airspace can include those portions of SUA areas that do not contain controlled airspace. Federal Aviation Regulations (FARs) associated with flights in SUA areas must be complied with by all pilots.

M3.1.3.1 Controlled Airspace

A *control zone* is airspace that is typically circular, with a radius of 5 statute miles around a primary airport, plus any extensions that are needed to include arrival and departure paths. Control zones extend from the surface of the ground to an altitude of 14,499 feet above mean sea level (MSL). Control zones are designated at airports with an FAA-operated control tower and where there are approved instrument procedures. Control zones may also be established at airports with a non-FAA control tower.

Control zones can encompass more than one airport facility. In the case of MHAFB, the control zone contains no other military or civil airports.

A *transition area* is controlled airspace around a primary airport designated to contain arriving and departing IFR operations within a terminal area or while transitioning between the terminal area and the en route airspace system. Transition areas extend upward from 700 feet AGL or higher when established in conjunction with an airport configured for instrument approach. They can also extend from 1,200 feet AGL or higher when established in conjunction with an airway route structure or segment (Airman's Information Manual [AIM] 1989). Transition areas terminate at the base of the overlying controlled airspace.

MHAFB is located within two transition areas. The smaller of the two was established for the purpose of containing IFR operations at the base between the altitudes of 700 feet and 1,500 feet AGL. The larger area is designated to contain arriving IFR aircraft at 1,500 feet AGL or higher and departing IFR aircraft until they reach 1,200 feet AGL.

Transition areas established for an airport terminal area can contain one or several airport facilities with instrument approach procedures. The MHAFB transition area encompasses the base and Mountain Home Municipal Airport.

An approach control area is that airspace area delegated by a Federal Aviation Administration (FAA) Air Route Traffic Control Center (ARTCC) to an approach control facility. The purpose is to provide terminal ATC approach control services to IFR and VFR aircraft arriving to or departing from any airport within the boundaries of the approach control area. Generally, an approach control area includes more than one airport.

Approach control facilities are operated either by the FAA or by a local military air traffic control unit. In the Mountain Home area, approach control service is provided by the U.S. Air Force-operated Radar Approach Control facility. The approach control airspace is delegated to Mountain Home Approach Control by the FAA Salt Lake City ARTCC. It consists of an area defined by specific lateral boundaries in which approach control services are provided to MHAFB, Mountain Home Municipal Airport, and to aircraft that may transit the approach control area. The approach control area is subdivided into two areas, each of which contain different vertical limits. One area, which contains MHAFB, has vertical limits between the surface and 17,000 feet MSL. Altitude limits in the second area, which contains Mountain Home Municipal Airport, are between the surface and 7,000 feet MSL.

In addition to the base and the public-use Mountain Home Municipal Airport, there are two public-use civil airports (Glenns Ferry Municipal Airport and the Grindstone Ag Airport) and four private-use civil airports (Kenworthy Airport, Young Airport, Mountain Home Airport, and Owen Airport) within the approach control boundaries. Mountain Home Approach Control can provide radar vectoring and traffic advisory services to VFR aircraft inbound to or departing from these private airports. These airports do not have any published instrument approach procedures.

Control areas include the airspace designated as colored federal airways, VHF Omnidirectional Range (VOR) federal airways, certain portions of the jet route system, and area low routes. The vertical extent of the various categories of airspace covered under control areas is defined in FAR Part 71. Control areas are depicted on Low Altitude Enroute, World Aeronautical, Sectional, and Terminal Area Control charts compiled and published by the National Oceanic and Atmospheric Administration (NOAA).

Control areas in the immediate vicinity of MHAFB consist of a portion of a VOR federal airway: Victor Airway 253-330. The centerline of Victor Airway 253-330 is located approximately 14 NM northeast of MHAFB. This airway provides a northwest-southeast route between the Boise and Twin Falls, Idaho areas.

Figure M3.1-1 depicts the controlled airspace areas associated with MHAFB. The Mountain Home approach control area and the MHAFB airport traffic area are shown in Figure M3.1-2.

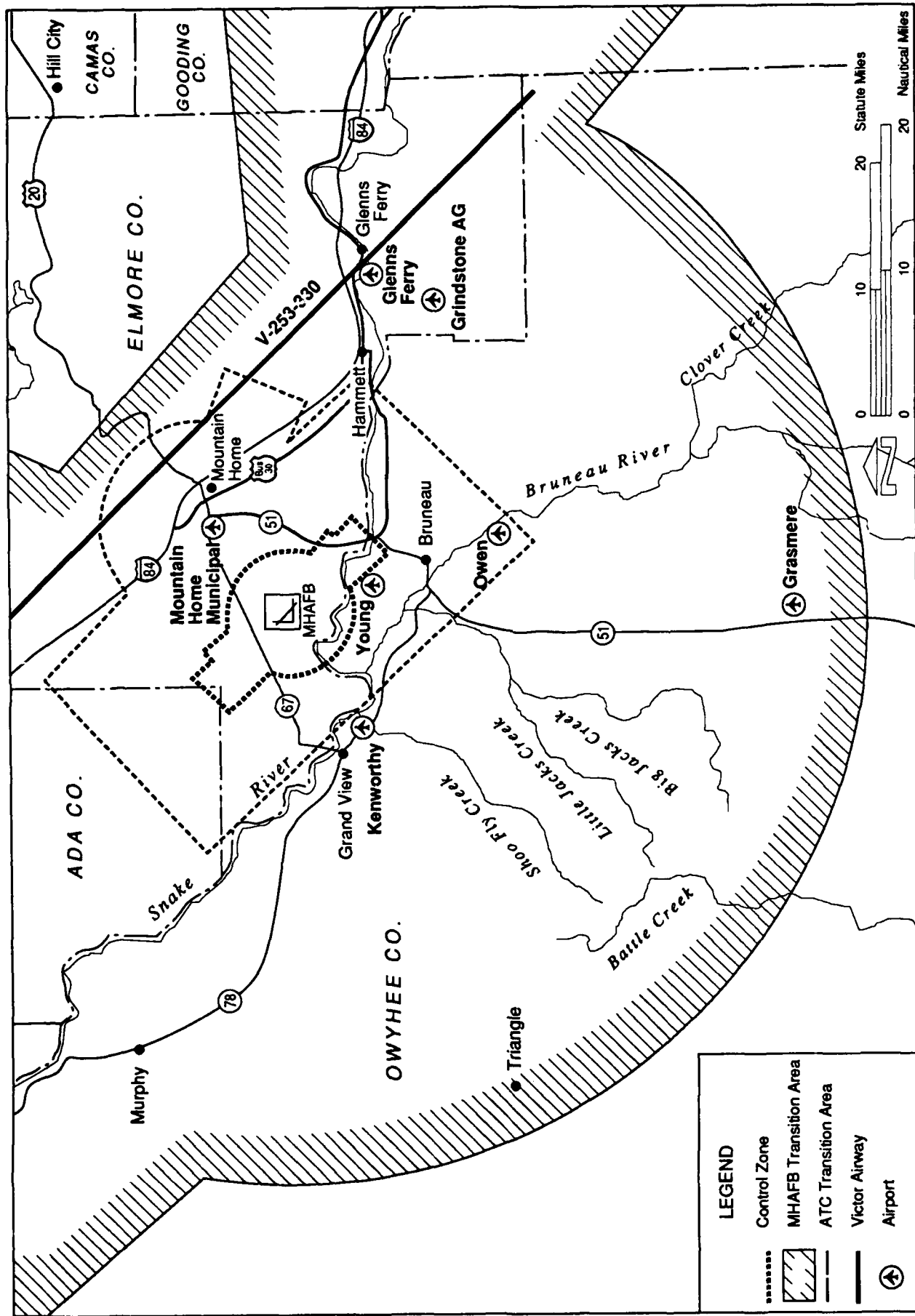


Figure M3.1-1
CONTROLLED AIRSPACE AREAS
MOUNTAIN HOME AIR FORCE BASE

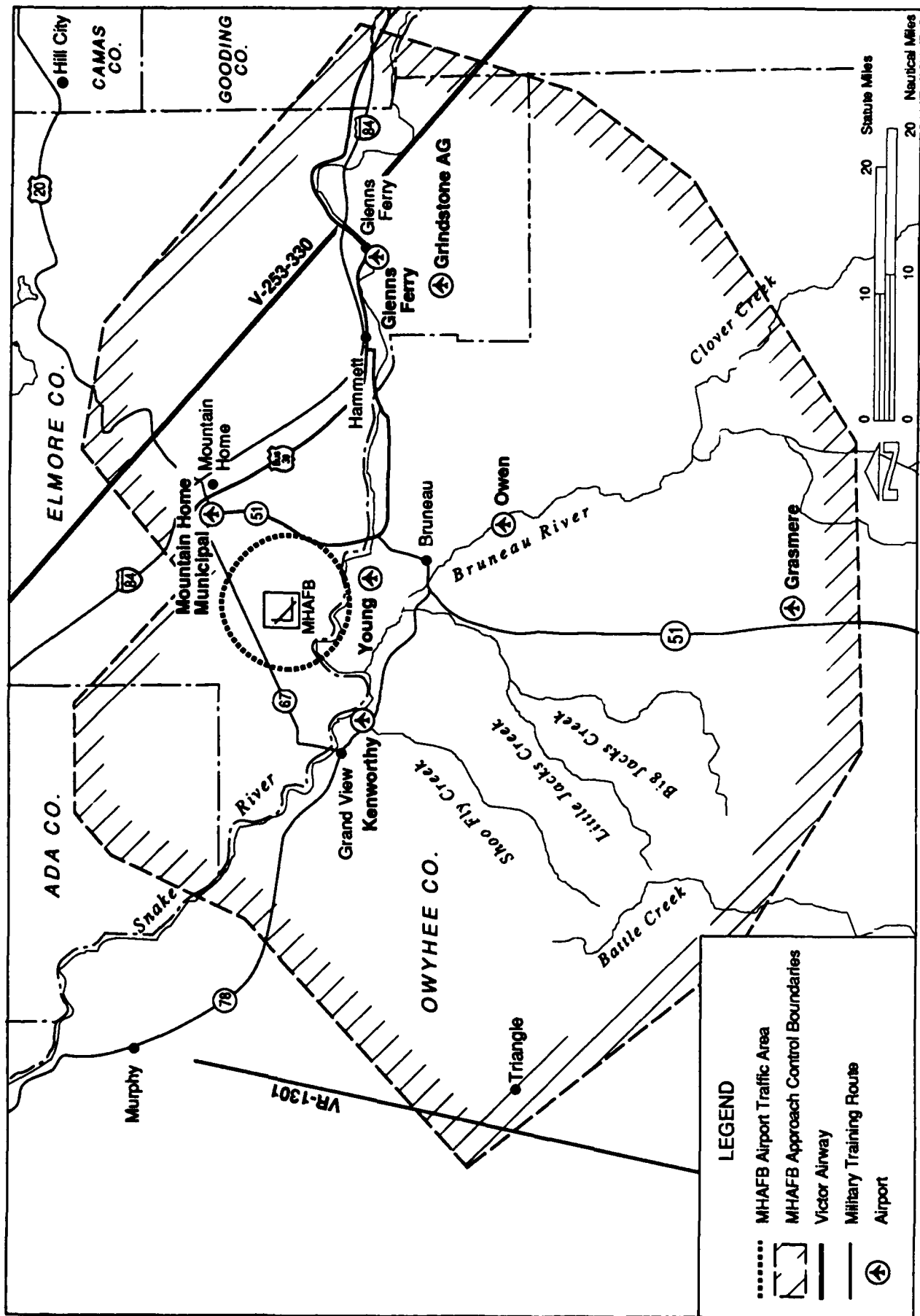


Figure M3.1-2
MOUNTAIN HOME APPROACH CONTROL AREA
MOUNTAIN HOME AIR FORCE BASE

M3.1.3.2 Special Use Airspace

Restricted airspace is a designated area in which aircraft activity, while not prohibited, is subject to certain restrictions. Most restricted areas are designated "joint-use," wherein flight operations may be authorized by the controlling ATC facility when the airspace is not in use. Two restricted areas, both of which are multiple joint space use areas, interact with the transition area airspace associated with MHAFB (see Figure M3.1-3).

Restricted area (R-)3202A is located approximately 12.5 NM southeast of the approach end of Runway 30 at MHAFB. A small portion of the northwest corner of R-3202A overlaps the southeast end of the base's transition area. R-3203 is located approximately 7.5 NM northwest of the approach end of MHAFB Runway 12. R-3203 (which is subdivided into areas R-3203A, R-3203B, and R-3203C) is used by the U.S. Army National Guard for artillery firing practice. A substantial portion of R-3203 interacts with the northwest portion of the MHAFB transition area.

Information obtained from the MHAFB approach control facility indicates that both R-3202 and R-3203 restrict arrival and departure procedures to runways 12/30. Current operations are conducted under an approved FAA waiver. This waiver permits aircraft operations in the MHAFB approach control area with less than standard separation from special use airspace, i.e., the Owyhee and Paradise MOAs. MHAFB aircraft operations require the continued use of an FAA-approved waiver.

M3.1.3.3 Other Airspace Areas

The MHAFB ATA corresponds with the standard definition of an ATA with no modifications. Aircraft cannot operate within the ATA unless the aircraft is landing or taking off or unless the pilot has been authorized by MHAFB ATC to fly within the ATA.

One MTR transits airspace associated with MHAFB. A 7-NM segment of the centerline of VR-1301 (a VFR training route) traverses the westernmost corner of the Mountain Home approach control area (see Figure M3.1-2). The width of the route is 5 NM either side of the centerline.

M3.1.3.4 Uncontrolled Airspace

Within a radius of 10 NM of MHAFB, there is virtually no uncontrolled airspace between the altitudes of 700 feet AGL and 14,500 feet MSL. Within a radius of between 10 NM and 20 NM, there is one area to the southwest where uncontrolled airspace exists between the surface and 1,200 feet AGL.

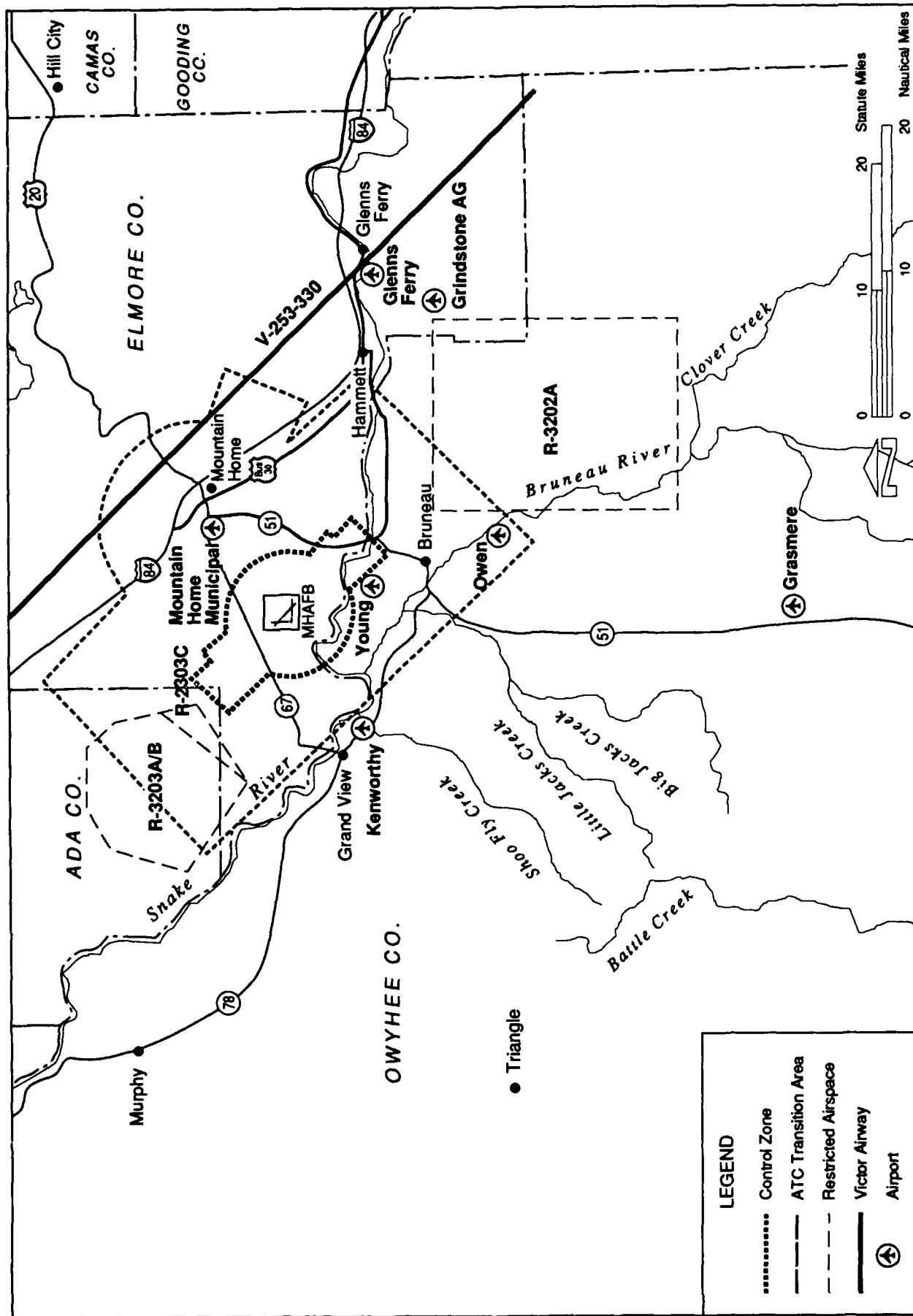


Figure M3.1-3
 TRANSITION AREA AND RESTRICTED AREA AIRSPACE INTERACTION
 MOUNTAIN HOME AIR FORCE BASE

M3.1.4 Current Aircraft Operations

MHAFB is currently home for two squadrons of F-111A aircraft and one squadron of EF-111A aircraft. In addition to flight operations by these aircraft, MHAFB is visited by a full range of transient U.S. Air Force tactical, strategic bomber, and tanker aircraft. Transient aircraft that most frequently operate at MHAFB include F-4E/Gs, F-16s, and B-52s. Other transient aircraft that deploy to MHAFB are F-14s, T-37s, T-38s, B-1Bs, KC-135s, A-6s, EA-6s, A-7s, C-130s, and C-141s. MHAFB serves as a weather alternate airport for SR-71 reconnaissance aircraft. Also, military helicopter operations occur at MHAFB.

In 1988, MHAFB had a total of 56,668 aircraft operations¹. Table M3.1-1 lists the annual operations by military, civil general aviation, and civil air carrier/air taxi categories of aircraft. Civil air carrier/air taxi operations generally consist of chartered air carrier services for military-related air transportation needs. Civil general aviation aircraft were transient aircraft visiting MHAFB on official business.

Table M3.1-1

1988 MHAFB Aircraft Operations by Aircraft Category

<i>Aircraft Category</i>	<i>Number of Operations (%)</i>
Military	56,111 (99.0)
Civil general aviation	95 (0.2)
Civil air carrier/air taxi	463 (0.8)
TOTAL OPERATIONS	56,668 (100.0)

Source: MHAFB Military Air Traffic Activities Reports, 1988 and 1989

Table M3.1-2 delineates the VFR local operations, the VFR itinerant operations, and operations by aircraft on an IFR flight plan. Essentially, an aircraft is counted as a local operation when it remains in the MHAFB VFR traffic pattern, which is basically contained within the ATA. Also, it is considered local when the aircraft is known to have been operating in a local practice area or when the aircraft flies multiple practice instrument approaches to the air base, during which the aircraft is in continuous radio contact with MHAFB ATC. Itinerant operations are basically those involving arrivals and departures from or to the en route airspace system.

1. An aircraft operation is defined as one takeoff or one landing.

Table M3.1-2

MHAFB Aircraft Operations by Type

<i>Type Operation</i>	<i>Number of Operations (%)</i>	
VFR Local	16,197	(28.6)
VFR Itinerant	4,089	(7.2)
IFR	36,382	(64.2)
TOTAL OPERATIONS	56,668	(100.0)

Source: MHAFB Military Air Traffic Activities Reports, 1988 and 1989

In 1988, Mountain Home Approach Control handled a total of 39,150 military and civil aircraft operations within its airspace. These included 33,778 military, 4,641 civil general aviation, and 731 air carrier operations. These approach control operations included IFR arrivals and departures at MHAFB and Mountain Home Municipal Airport, and overflights of, or VFR advisory services for, aircraft transiting the airspace.

Information provided by MHAFB ATC indicates that the traffic count for VFR services (4,914) represents the majority of actual VFR transient aircraft that fly through the Mountain Home terminal and transition areas. Most VFR aircraft contact Mountain Home Approach Control for traffic advisories because of the extensive military activity and special use airspace in the area. However, because there is no requirement for VFR aircraft that operate outside of the MHAFB ATA to contact an ATC facility, there may be additional unrecorded or unknown aircraft movements through the MHAFB terminal area. Because most military flights, virtually all air carrier flights, and most flights by general aviation business or corporate aircraft operate on IFR flight plans, the majority of this activity is reflected in recorded air traffic control data: 16,021 IFR arrivals and 16,142 IFR departures. Thus, the preponderance of unknown aircraft operations in the Mountain Home terminal area is general aviation aircraft, used for private, recreational, or flight training purposes.

Since all of the civil and private airports in the vicinity of MHAFB are uncontrolled airports, there are no recorded traffic data for any of these facilities. According to current Idaho Aeronautics Department airport inventory data, there are 33 based aircraft and an estimated 17,000 annual aircraft operations at the Mountain Home Municipal Airport. Information obtained from the airport operator indicates that a considerable portion of Mountain Home Municipal Airport aircraft operations involve student pilot training activity. Presently, flight training practice areas are located approximately 5 miles northwest and 5 miles southeast of the airport. According to the airport operator, the training activities in these practice areas do not conflict with any military aircraft operations.

The state aviation system plan states that in 1984 there were four based aircraft and an estimated 3,000 annual operations at the Glenns Ferry Municipal Airport. All based aircraft were single-engine aircraft. The Grindstone Ag Airport, which is the only other public-use airport near MHAFB, has no based aircraft, with operations limited to summertime seasonal activity by agricultural spraying aircraft.

Table M3.1-3 delineates the aviation system plan base year 1984- and forecast year 1995-based aircraft and airport operations data at selected airports in the Boise-Mountain Home-Twin Falls area. The information indicates that the number of civil based aircraft in the region will grow approximately 48 percent. Aircraft operations will increase approximately 49 percent during the 11-year period. The most significant growth is projected to be in the Boise area, as evidenced by the identified need for a new reliever airport, and at the Twin Falls-Sun Valley Regional Airport, which could have a 49 percent increase in aircraft operations.

Table M3.1-4 focuses on Mountain Home Municipal Airport and Glenns Ferry Municipal Airport in the Mountain Home area. The data listed in this table are based on updated information from airport inventories conducted by the Idaho Aeronautics Department in 1989. The third public-use airport, Grindstone Ag Airport, is not included in the Idaho Aviation System Plan. This airport has no based aircraft and is used only seasonally for agricultural spraying aircraft.

The data in Table M3.1-4 indicate a modest growth of about 16 percent in aircraft operations at Mountain Home Municipal Airport and a 50-percent growth in aircraft operations at Glenns Ferry Municipal Airport. The total number of based aircraft is expected to decrease at Mountain Home Municipal Airport and increase at Glenns Ferry Municipal Airport.

Table M3.1-3

**AIRPORT ACTIVITY FORECASTS
BOISE-MOUNTAIN HOME-TWIN FALLS AREA**

<i>Airport</i> ¹	BASE YEAR 1984		FORECAST YEAR 1995	
	<i>Based Aircraft</i>	<i>Aircraft Operations</i> ²	<i>Based Aircraft</i>	<i>Aircraft Operations</i> ¹
Boise Air Terminal	396	142,576	521	188,730
Boise Reliever (Proposed)	--	--	85	32,000
Buhl Municipal	47	9,400	66	13,200
Caldwell Industrial	70	50,000	100	71,100
Emmett Municipal	36	20,000	72	40,300
Glenns Ferry Municipal	4	3,000	6	4,500
Gooding Municipal	11	11,000	14	15,400
Idaho City	1	1,050	1	1,100
Jerome County	30	20,850	41	28,325
Mountain Home Municipal	26	16,230	30	18,730
Murphy Airstrip	0	3,120	0	3,100
Nampa Municipal	108	71,310	154	101,610
Twin Falls-Sun Valley Regional	132	43,587	184	65,150
TOTAL	861	392,123	1,274	583,245

Note: 1. A number of smaller airports in this area are not included in the Idaho Aviation System Plan, thus no activity forecasts are available for these airports.

2. Includes total commercial airline, general aviation, and military operations.

Source: State of Idaho, Idaho Aviation System Plan. November 1988.

Table M3.1-4

**AIRPORT ACTIVITY FORECASTS
MOUNTAIN HOME AREA**

<i>Airport</i>	----- 1989 -----		FORECAST YEAR 1995	
	<i>Based Aircraft</i>	<i>Aircraft Operations</i>	<i>Based Aircraft</i>	<i>Aircraft Operations</i>
Mountain Home Municipal	33	17,000	30	18,730
Glenns Ferry Municipal	4	3,000	6	4,500
TOTAL	37	20,000	36	23,230

Source: Idaho Aeronautics Department, Airport Inventories, 1989; State of Idaho, Idaho Aviation System Plan, November 1988.

M3.2 AIR RESOURCES

M3.2.1 Definition of Resource

Air quality in a given location is described by the concentrations of various pollutants in the atmosphere, expressed in units of parts per million (ppm) or micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). Air quality is determined by the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and meteorological conditions related to the prevailing climate. The significance of a pollutant concentration is determined by comparison with federal and/or state air quality standards. These standards represent the maximum allowable concentrations of various pollutants necessary to protect public health and welfare with a reasonable margin of safety. Federal standards have been established by the EPA and are termed the National Ambient Air Quality Standards (NAAQS). The NAAQS are defined as maximum pollutant concentrations that may not be exceeded more than once a year, except annual standards, which may never be exceeded. These standards include maximum concentrations for ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter less than 10 microns in diameter (PM_{10}), and lead (Pb). Within the study area, the Idaho Air Quality Bureau (IAQB) has adopted the NAAQS to regulate pollutant levels. The NAAQS are shown in Table M3.2-1.

M3.2.2 Region of Influence

The realignment of MHAFB would affect air quality in Elmore County. Specifically identifying the ROI for air quality requires knowing the pollutant type, emission rates and release parameters (e.g., stack height) of a pollutant source, source proximity to other pollutant sources, and local and regional meteorology. For inert pollutants (all pollutants other than O_3 and its precursors), the ROI is generally limited to a few miles downwind from a source.

The ROI for O_3 extends much farther downwind than for inert pollutants. Ozone is a secondary pollutant formed in the atmosphere by photochemical reactions of previously emitted pollutants, or precursors. Ozone precursors are mainly reactive hydrocarbons (RHC) and nitrogen oxides (NO_x). In the presence of solar radiation, the maximum effect of precursor emissions on O_3 levels usually occurs several hours after they are emitted, and therefore many miles from the source.

M3.2.3 Climate

The ROI is located in the southern portion of the Columbia Plateau. This area has a continental climate which is characterized by low to moderate precipitation, large variations in annual and diurnal temperatures, and low relative humidity. Due to the prevailing westerly winds, the study area is often

Table M3.2-1

NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	NATIONAL STANDARDS ^a	
		Primary ^b	Secondary ^c
Oxidant (ozone)	1-hour	0.12 ppm (240 $\mu\text{g}/\text{m}^3$)	Same
Carbon monoxide	8-hour	9 ppm (10 mg/m^3)	Same
	1-hour	35 ppm (40 mg/m^3)	Same
Nitrogen dioxide	Annual average	100 $\mu\text{g}/\text{m}^3$ (0.05 ppm)	Same
Sulfur dioxide	Annual average	80 $\mu\text{g}/\text{m}^3$ (0.03 ppm)	Same
	24-hour	365 $\mu\text{g}/\text{m}^3$ (0.14 ppm)	Same
	3-hour	none	1,300 $\mu\text{g}/\text{m}^3$ (0.5 ppm)
PM ₁₀	Annual	50 $\mu\text{g}/\text{m}^3$	Same
	24-hour	150 $\mu\text{g}/\text{m}^3$	Same
Lead	Quarter	1.5 $\mu\text{g}/\text{m}^3$	Same
Nonmethane hydrocarbons	3-hour	none	Same

Notes:

- National standards, other than those based on annual averages or annual geometric means, are not to be exceeded more than once per year. The Idaho Air Quality Bureau has adopted the NAAQS to regulate pollutant levels.
- National Primary Standards express the level of air quality necessary to protect the public health from any known or anticipated adverse effects of a pollutant, allowing for a margin of safety to protect sensitive members of the population.
- National Secondary Standards express the level of air quality necessary to protect the public welfare by preventing injury to agricultural crops and livestock, deterioration of materials and property, and adverse impacts on the environment.

influenced by Pacific air masses. As these air masses pass over the Cascade Mountain Range to the west, they often lose much of their moisture by precipitation. This produces a rainshadow effect and resulting semi-arid climate within the study area. The Rocky Mountains also protect the study area from many of the extreme continental arctic air masses that traverse the Great Plains to the east. During the summer months, the study area is usually under the influence of warm, dry continental air masses. Meteorological data used to measure climactic variation in the study area are collected at locations throughout southwestern Idaho (see Figure M3.2-1).

M3.2.3.1 Temperature

Temperature data collected at locations in and around the study area are presented in Table M3.2-2. These data show a wide range of diurnal and annual temperature variations experienced in the study area and are a result of low relative humidities. Extreme temperatures that occurred at MHAFB from 1943 through 1986 ranged from a high of 111 °F to a low of -22 °F (USAF 1987).

M3.2.3.2 Precipitation

Much of the precipitation in the study area is produced from storm systems that originate in the polar regions during the colder months of the year. Summer rainfall is infrequent and usually occurs from afternoon and evening thunderstorms. Precipitation data within the study area are summarized in Table M3.2-3. Precipitation is generally heaviest during the late winter and springtime. Snow occurs throughout the study area during the colder months of the year.

M3.2.3.3 Winds

There are three regional influences of wind conditions within the study area: (1) during the cooler months of the year, cold air often drains down the Snake River Valley and winds prevail from the east-southeast direction; (2) the relatively cold Pacific Ocean and warm continent during the summer produces a pressure gradient where northwest winds prevail; and (3) the passage of polar storm systems throughout much of the year produces shifting winds from the southeast to northwest directions. Topography also plays an important role in producing localized wind conditions within the study area.

Meteorological data recorded at MHAFB have shown that winds prevail from the east-southeast direction from October through March. Winds for the remainder of the year prevail from the northwest direction. The average wind speed ranges from five to seven knots on a monthly basis, with the highest average wind speeds occurring in February through May. Calm wind conditions are most frequent during the winter months.

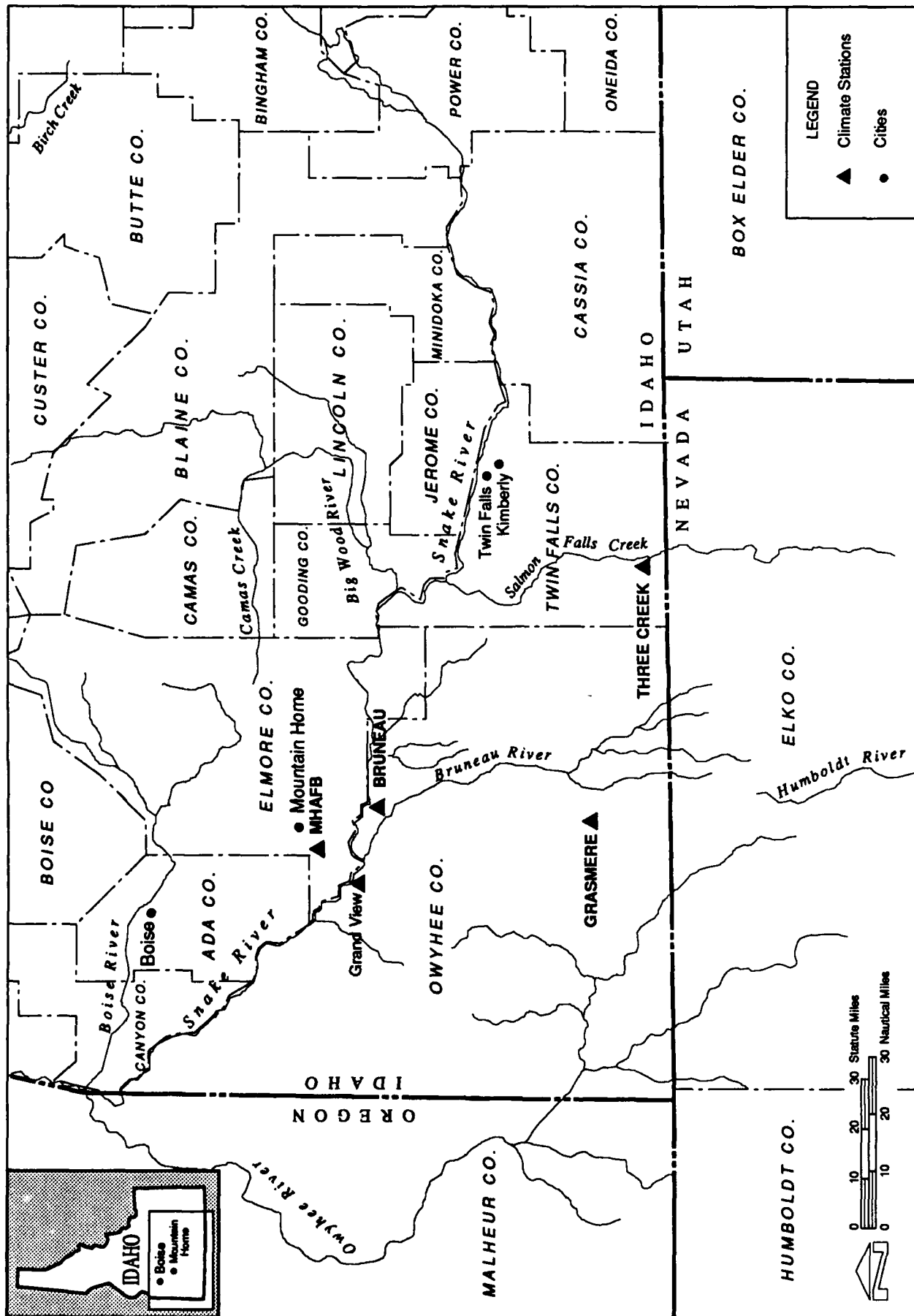


Figure M3.2-1
REPRESENTATIVE CLIMATE STATIONS FOR THE STUDY AREA

Table M3.2-2

AVERAGE MAXIMUM AND MINIMUM TEMPERATURES FOR THE MNAFB STUDY AREA (°F)

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
MNAFB ¹	36 22	44 27	52 30	61 36	71 44	80 52	92 59	89 58	78 48	65 38	49 30	38 23	63 39
Bruneau ²	41 23	49 26	56 29	66 36	76 43	86 52	94 57	90 54	82 45	70 38	52 30	42 24	66 38
Three Creek ²	39 12	43 17	47 20	56 26	65 33	74 38	87 42	86 40	75 33	63 26	49 21	41 15	61 27

Sources: 1. USAF 1987; AWS Climatic Briefs for MNAFB
 2. Gehr et al. 1982

Table M3.2-3

PRECIPITATION DATA SUMMARY FOR THE MHAFB STUDY AREA
(Inches)

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
MHAFB¹													
Precipitation	1.00	0.70	.080	0.70	0.80	0.90	0.30	0.30	0.50	0.50	1.00	0.90	8.40
Snowfall	4.0	2.0	1.0	Tr.	Tr.	Tr.	0.0	0.0	Tr.	Tr.	2.0	4.0	13.0
Bruneau²													
Precipitation	0.52	0.36	0.20	1.52	0.86	0.83	0.17	0.00	0.19	0.27	1.00	0.52	6.44
Snowfall													
Three Creek²													
Precipitation	0.99	0.91	1.05	1.40	2.07	1.35	0.35	0.20	0.50	0.71	1.07	0.84	11.44
Snowfall	15.3	12.3	13.5	5.9	2.5	0.1	0.0	0.0	0.1	2.0	7.0	13.8	72.5
Grand View³													
Precipitation	0.71	0.58	0.91	0.70	1.09	0.83	0.16	0.11	0.33	0.47	0.68	0.69	7.26
Snowfall													
Grasmere²													
Precipitation	0.39	0.47	0.68	0.50	1.57	1.12	0.05	0.27	0.22	0.19	0.62	0.63	6.71
Snowfall													

Sources: 1. USAF 1987; AUS Climatic Briefs for MHAFB
 2. Gehr et al. 1982
 3. BLM 1979

M3.2.3.4 Adverse Air Quality Conditions

Increased degradation of air quality can occur when the dispersion of locally emitted air pollutants is restricted by temperature inversions or low wind speeds. These conditions usually occur during the late night and early morning hours in the colder months of the year. High particulate matter concentrations can also occur when strong winds increase fugitive dust emissions from the desert floor or from sources such as agricultural activities or dirt roads.

M3.2.4 Air Quality

According to EPA guidelines, an area with air quality better than the NAAQS is designated as being "in attainment," while areas with air quality worse than the NAAQS are classified as nonattainment areas. A nonattainment designation means that a primary NAAQS has been exceeded more than three discontinuous times in three years in a given area. The ROI within Idaho is presently designated as in attainment for all criteria pollutants by the EPA (personal communication, D. Gudgeon 1989). The nearest nonattainment area is the Boise metropolitan area, which currently exceeds the NAAQS for CO. The attainment status for particulates is being revised by the IAQB and EPA, since the NAAQS for PM₁₀ has recently superseded the NAAQS for total suspended particulates (TSP). However, the ROI is presently designated as a Group III area for PM₁₀, meaning that there is less than 20 percent probability of exceeding the primary NAAQS for PM₁₀.

Due to the low population and lack of numerous large emission sources, air quality in the ROI is generally very good. As a result, ambient pollutant concentrations have rarely been monitored within Elmore County. The two closest monitoring stations to the study area are located in Boise, 50 miles north-northwest of MHAFB, and Kimberly, approximately 90 miles southeast of MHAFB and 5 miles southeast of Twin Falls. Ambient pollutant concentrations monitored at these locations from 1983 through 1987 are presented in Table M3.2-4 (IAQB 1988). These data show that the 8-hour NAAQS for CO continues to be exceeded in the Boise area due to congested traffic conditions and residential wood burning. The 24-hour PM₁₀ exceedance at Kimberly was due to the proximity of agricultural emissions of fugitive dust and crop burning.

Ambient pollutant concentrations at these two monitoring stations are expected to be higher than concentrations within the MHAFB study area because (1) Boise is an urban area with a higher density of emissions sources and (2) the Kimberly monitor is located adjacent to agricultural activities.

M3.2.5 Emission Inventories

Emissions that occurred at MHAFB for fiscal 1988 (October 1987 through September 1988) are presented in Table M3.2-5 (USAF 1989). Factors used to estimate aircraft emissions were obtained

Table M3.2-4

**AMBIENT AIR POLLUTANT LEVELS MONITORED IN PROXIMITY TO MHAFFB
FROM 1983-1987¹**

Pollutant/ Monitoring Station	Averaging Time	Unit of Measure	--MAXIMUM CONCENTRATION BY YEAR--				
			1983	1984	1985	1986	1987
<u>Carbon monoxide</u>							
Boise ²	1-hr	ppm	31.8	19.0	18.3	19.5	19.5
	8-hr	ppm	15.6*	10.2*	9.9*	11.6*	13.8*
<u>Total suspended particulates</u>							
Boise ²	24-hr	ug/m ³	415	330	397	410	205
Kimberly			--	--	--	239	479
Boise ²	Annual	ug/m ³	70	73	86	100	88
Kimberly			--	--	--	46	48
<u>PM₁₀</u>							
Boise ²	24-hr	ug/m ³	--	--	--	325	107
Kimberly			--	--	--	--	157*
Boise ²	Annual	ug/m ³	--	--	--	--	48
<u>Lead</u>							
Boise ²	Calendar quarter	ug/m ³	0.69	0.93	1.00	0.40	0.16

Notes:

* Exceeds the NAAQS

1. Ozone and nitrogen dioxide are no longer monitored in Idaho, due to low ambient levels.

2. There are up to five monitoring stations in the Boise metropolitan area. The highest pollutant level monitored at these stations on an annual basis is included in this table.

Source:

IAQB 1988

Table M3.2-5

**EMISSION INVENTORY FOR MHAFFB STUDY AREA
FOR FISCAL 1988
(tons/year)**

	<i>CO</i>	<i>THC</i>	<i>NO_x</i>	<i>SO₂</i>	<i>PM</i>
Base Activity					
Coal-fired heating plant	33.8	0.7	94.5	184.3	114.8
Furnaces (fuel oil-fired)	0.5	0.3	1.9	4.6	0.3
Boilers (natural gas-fired)	0.9	0.4	4.4	0.02	0.2
Incinerators	0.01	--	--	--	0.02
Fuel storage and transfer	--	296.8	--	--	--
Surface coatings	--	24.4	--	--	--
Diesel vehicles	17.8	2.9	14.0	1.7	0.8
General purpose vehicles	69.1	7.4	7.4	0.3	0.9
Personal vehicles	369.6	39.7	39.5	1.6	5.2
Aerospace ground equipment	35.5	6.7	11.5	1.0	3.8
Aircraft ground operations	57.3	18.8	42.4	10.1	1.8
Aircraft landing/takeoff and touch/go	926.1	716.8	179.3	28.2	24.8
TOTAL BASE EMISSIONS	1,501.6	1,114.8	394.0	231.8	174.1

from *Aircraft Engine Emissions Estimator* (Seitchek 1985). Emission factors for stationary sources and diesel vehicles were obtained from AP-42, *Compilation of Air Pollutant Emission Factors*, Volumes I and II (EPA 1985a), respectively. Emission factors for general purpose and personal vehicles and aerospace ground equipment were obtained from *Air Pollution Emission Inventories* (USAF 1979).

MHAFB is the main source of air emissions within Elmore County (personal communication, O. Green, 1989). The largest stationary source of emissions on-base is the coal-fired plant for hot water and heating. However, most emissions associated with base activities are produced from aircraft landing and take-off and ground operations. Total base emissions for fiscal 1988 amounted to 1,501.6 tons of CO, 1,114.8 tons of total hydrocarbons (THC), 394.0 tons of NO_x, 231.8 tons of SO₂, and 174.1 tons of particulate matter (PM).

M3.3 NOISE

M3.3.1 Definition of Resource

Noise is defined as "unwelcome or unwanted" sound that is usually caused by human activity and added to the natural acoustic setting of a locale. It is further defined as sound that disrupts normal activities or that diminishes the quality of the environment. There are two types of noise sources: stationary and transient. Stationary sources are typically related to specific land uses, e.g., housing tracts and industrial plants. Transient noise sources move through the environment either along established paths (railroads, roads, and flight tracks) or randomly. The total acoustical environment of a locale is the blend of the background or ambient acoustics with the "unwanted" noise. The human response to noise is diverse and varies with the type of noise, the time of day, and the sensitivity of the receptor.

The measurement of noise is usually performed using the A-weighted sound level scale expressed in dB(A) units. This scale approximates the characteristics of normal human hearing over a wide frequency range. Impulsive noise measurements, such as from a small arms range, are expressed using the C-weighted sound level scale, dB(C) units.

The EPA examined noise evaluation methods that could be employed for the protection of public health and welfare with a reasonable margin of safety (EPA 1974), and recommended use of the Day-Night Average Sound Level, L_{dn} , as a descriptor of the 24-hour daily noise environment. The L_{dn} is the energy-equivalent average A-weighted sound level over an average busy 24-hour day. In order to compute an L_{dn} , a single noise event is measured and corrections are added for the number of events and the time of day. An L_{dn} includes a 10-dB penalty to noise that is generated during nighttime hours, i.e., 10 P.M. to 7 A.M. local time. The L_{dn} metric is used extensively to assess non-impulsive noise environments. It has been adopted by federal agencies, including the EPA, DOT, HUD, and DOD, for establishing guidelines for land use compatibility. Table M3.3-1 illustrates typical L_{dn} values that are representative of various community environments. The background (ambient) L_{dn} levels in remote uninhabited rural areas would typically be on the order of 33 to 40 dBA (Eldred 1971; EPA 1979).

The L_{dn} metric is used extensively to assess the noise environment caused by aircraft operations around civilian and military air installations. The frequency, magnitude, and duration of each noise event varies according to the airframe type, engine type, power setting, and aircraft attitude. Therefore, individual aircraft noise data are collected for the aircraft being assessed at different power settings and phases of flight.

The L_{dn} metric and its derivatives provide a uniform, consistent, and approved method for relating noise to normal, expected human response. These can be readily related to land use compatibility

Table M3.3-1

**TYPICAL SOUND LEVELS MEASURED IN THE ENVIRONMENT
AND INDUSTRY**

<i>At a Given Distance from Noise Source</i>	<i>A-Weighted Sound Level in Decibels</i>	<i>Noise Environments</i>	<i>Subjective Impression</i>
Civil defense siren (100')	140		
	130		
Jet takeoff (200')	120		Pain threshold
	110	Rock music concert	
Pile driver (50')	100		Very loud
Ambulance siren (100')	90	Boiler room	
Freight cars (50')	80	Printing press plant	
Pneumatic drill (50')	80	In kitchen with garbage disposal running	
Freeway (10')	70		Moderately loud
Vacuum cleaner (10')	60	Data processing center	
Light traffic (100')	50	Department store	
Large transformer (200')	40	Private business office	
	40		Quiet
Soft whisper (5')	30	Quiet bedroom	
	20	Recording studio	
	10		Threshold of hearing
	0		

criteria for civilian airport (FAA 1977) and military air installation (DOD 1977) environments. These metrics are used to estimate the percentage of people who would be "highly annoyed" when exposed to specific L_{dn} noise levels, as illustrated in Figure M3.3-1. The "highly annoyed" categorization was derived from studies that examined noise levels versus various degrees of annoyance.

The noise environment in the vicinity of MHAFFB that is affected by current aircraft operations or that would be affected by the action are modeled using the L_{dn} metric. L_{dn} is used to assess noise impacts to air installations using the NOISEMAP computer model, where the noise levels are measured in dBA.

A further discussion of the potential effects on people, wildlife, and structures from noise is contained in Appendix F.

M3.3.2 Region of Influence

The ROI is the geographic area around MHAFFB. It is also composed of the area beneath the local air traffic patterns around the base and the Mountain Home approach and departure paths up to an altitude of approximately 5,000 feet AGL.

M3.3.3 Baseline Noise Analysis Methodology

The analysis of the current noise impacts at MHAFFB was performed by the U.S. Air Force Engineering and Services Center (AFESC/DEMP), at Tyndall AFB, Florida. The Center used aircraft operational data provided by the 366 TFW, MHAFFB, and the NOISEMAP computer program to estimate the current noise environment around the base. Data essential for the implementation of the noise analysis process and for the generation of NOISEMAP contours were the following:

- o *Flight tracks or traffic patterns* around the air installation.
- o *Aircraft types* identified for each flight track.
- o *Altitude* of each aircraft type for each pattern segment.
- o *Airspeed* of each aircraft type for each flight track segment.
- o *Power setting* of each aircraft type for each flight track segment around the range.
- o *Annual sorties and passes* made by each aircraft type on each flight track or pattern.

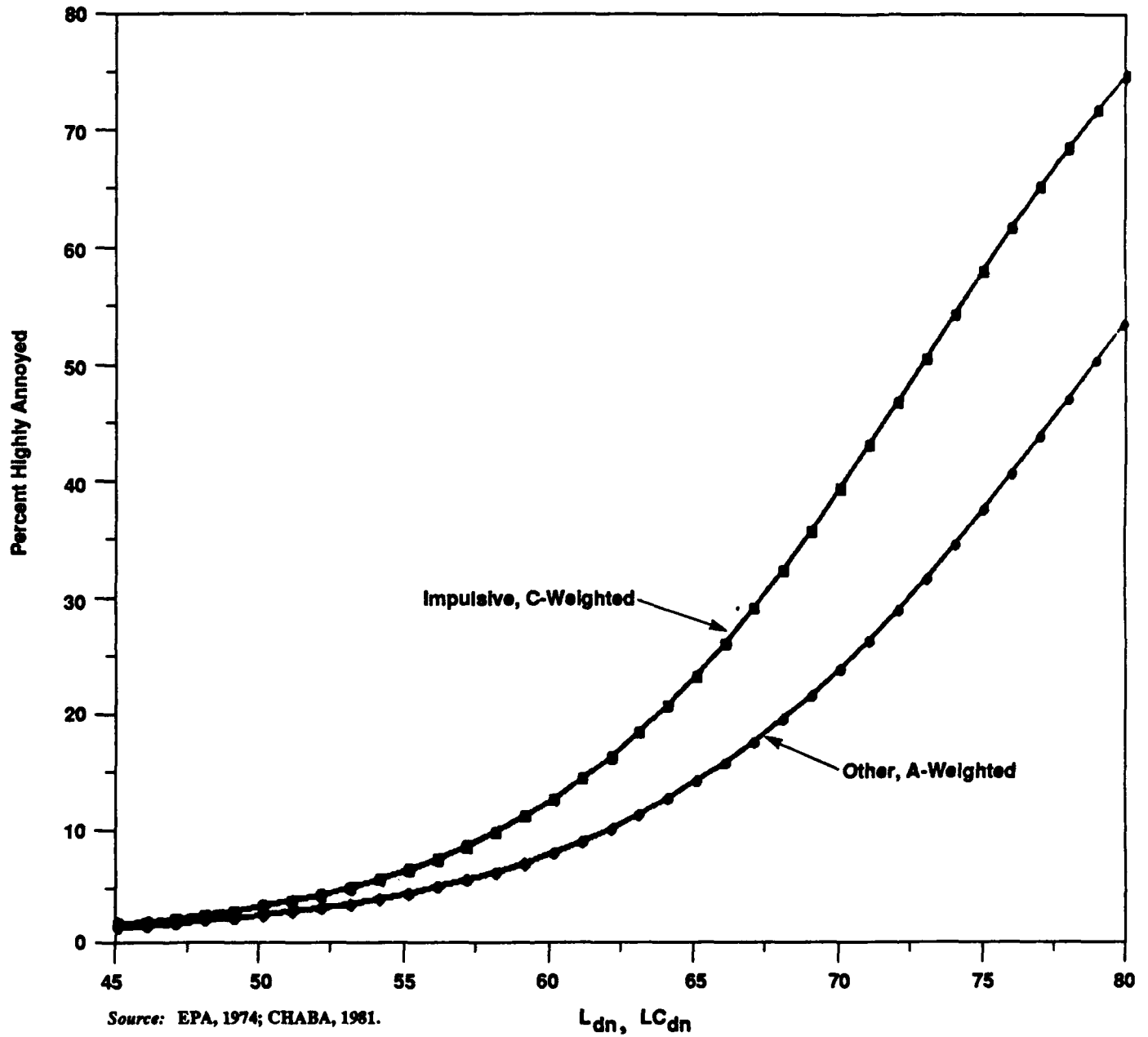


Figure M3.3-1
RECOMMENDED RELATIONSHIP FOR PREDICTING COMMUNITY RESPONSE
TO HIGH ENERGY IMPULSIVE SOUNDS AND TO OTHER SOUNDS

- o *Numbers of annual patterns* for touch-and-go closed patterns, straight-out departures, and straight-in approaches.
- o *Length of time* each aircraft operated in the pattern, or while departing or approaching the air installation.

These data were compiled for the current primary aircraft users of MHAFB (EF-111A and F-111A aircraft) and transient users of the base. The data and NOISEMAP model program were used to calculate the current noise contours around the base.

The AICUZ methodology for assessing noise impacts is based on the L_{dn} metric. The L_{dn} values in decibels (dBA) used for AICUZ land-use planning purposes are 65, 70, and 75 dBA. Land-use guidelines are based on the suitability of various types of land uses when compared to these noise levels. (Refer to Section M3.8, Land Use, for an analysis of the different land uses as they relate to the AICUZ study for the area surrounding MHAFB.) L_{dn} values are based on single-event noise levels with corrections applied to these values based on the number of flights over a given point and at a particular time of day. Nighttime noise events are considered more annoying than daytime; therefore, a 10 dB noise penalty is applied by the model to these nighttime events.

In addition to the assessment of aircraft flight operations, noise generated by engine runup and ground maintenance tests is incorporated into the model. The flight track and ground runup information and single event levels were combined to produce a single L_{dn} for each aircraft type. These events were combined to form a composite L_{dn} measure for all aircraft. L_{dn} values were determined for each point of a grid that was laid over the area surrounding MHAFB. Equal L_{dn} values on the grid were then connected to form the noise contours on which the AICUZ was based.

M3.3.4 Results of Baseline Noise Analysis

The 366 TFW is currently based at MHAFB and is composed of three flying squadrons of F-111A and EF-111A aircraft: the 389th Tactical Fighter Training Squadron (TFTS), the 390th Electronic Combat Squadron (ECS), and the 391st Tactical Fighter Squadron/Training (TFS/T). Each squadron can be described as follows:

- o The 389 TFTS has a primary mission to train pilots and weapon systems officers (WSOs) to operate F-111A aircraft. Following completion of their training, personnel are either deployed to operational F-111A squadrons overseas, at Cannon AFB, New Mexico, or to the EF-111A squadron at MHAFB.

- o The 390 ECS has EF-111A aircraft, and it is the only operational electronic warfare (EW) squadron in the Air Force inventory. Therefore, should hostilities break out, it would be one of the first squadrons to be deployed. The squadron's secondary role is to train pilots and electronic weapons officers (EWOs) new to the EF-111A.
- o The 391 TFS/T has a primary mission to train pilots and WSOs on the F-111A's tactical bombing missions. The secondary mission of the squadron is training of pilots and WSOs new to the aircraft.

Seven basic flight tracks or patterns are flown by these and transient aircraft while operating in the MHAFB area: modified straight-out departure, straight-in arrival, modified straight-in arrival, closed pattern, overhead arrival to landing, re-entry to pattern, and radar-vector pattern. These flight tracks are based on several factors. Air Force operational regulations for each aircraft type must be followed; these regulations govern airspeed, rate of climb and descent, and turning radius. Terrain features and man-made obstructions are avoided. Overflight of heavily populated areas is avoided. All aircraft operations are coordinated between the Mountain Home Control Tower, Mountain Home Approach, and Salt Lake Center to minimize conflict with transient civilian aircraft operations. (Refer to Section M3.1, Airspace Management, for an analysis of the airspace and aircraft operations in the vicinity of MHAFB.)

The current noise level conditions in the surrounding MHAFB environment are depicted in Figure M3.3-2 along with the MHAFB Air Base Area Boundary. The Air Base Area Boundary was established by Elmore County ordinance to protect MHAFB from encroaching development (see section M3.8.5.2 for a discussion of this ordinance). Noise levels greater than 85 L_{dn} are centered about the runway and north ramp complex; the affected area extends approximately 13,000 feet northwest and southeast of the departure ends of Runway 30/12 and 2,500 feet to the side of the main runway. The area affected by noise levels greater than 70 L_{dn} is approximately 12,000 acres in size. Approximately 22,000 acres is affected by noise levels greater than 65 L_{dn} , which extends approximately 30,000 feet northwest and southeast of the departure ends of Rwy 30/12 (see Table M3.3-2).

Refer to Section M3.8, Land Use, for identification of the different land uses beneath the various noise-level contours for the area surrounding MHAFB.

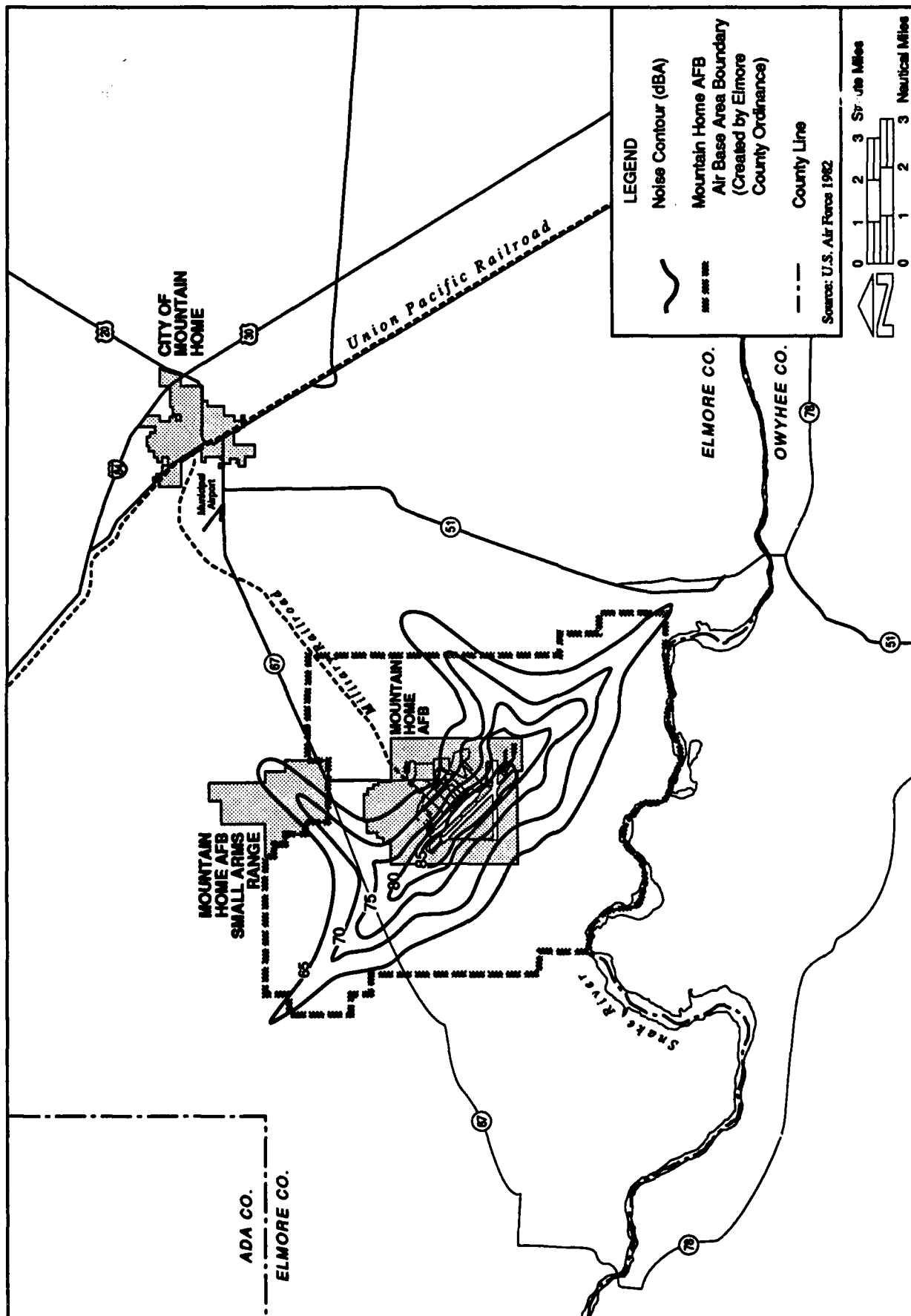


Figure M3.3-2
BASELINE NOISE CONTOURS
MOUNTAIN HOME AFB

Table M3.3-2

LAND USE WITHIN CURRENT MHAFB NOISE CONTOURS

<i>Affected Land Use Component</i>	----- DAY-NIGHT NOISE LEVELS, L _{dn} -----				
	85	80	75	70	65
Total Area (acres)	1,000	2,500	5,600	12,000	22,000
Number of Dwellings (off-base)	0	0	0	0	0
Number of Residents Off-Base	0	0	0	0	0
Percent of Land Area					
Residential	0	0	0	0	0
Commercial	0	0	0	0	0
Agricultural	0	20	40	60	85
Military (on-base)	100	80	60	40	15

M3.4 BIOLOGICAL RESOURCES

M3.4.1 Definition of Resource

Biological resources include terrestrial and aquatic vegetation (including wetlands and riparian areas), terrestrial wildlife (excluding livestock), aquatic biota, and threatened and endangered species.

M3.4.2 Region of Influence

The ROI for biological resources includes MHAFB, the city of Mountain Home, and the surrounding area within which indirect impacts related to recreation of in-migrants could occur (see Figure M3.4-1). This ROI is the same as that defined for recreation (i.e., the area within approximately two hours driving time of MHAFB). The region includes all of the Snake River Birds of Prey National Conservation Area (BOPA), Mount Bennett, and portions of the Owyhee and Danskin mountains. The southern part of the region overlaps the region of influence for the proposed expanded range capability.

In the descriptions that follow, more detail is provided for MHAFB and its immediate vicinity since construction activities would occur on the base and in the city of Mountain Home. Impacts in the remainder of the ROI would be related primarily to recreational activities of in-migrants. Although these activities would most likely be concentrated at developed recreation sites, some could occur throughout the region. Consequently, the baseline environment in areas away from MHAFB is described in more general terms.

M3.4.3 Vegetation

MHAFB is located in the Snake River Plains section of the Columbia Plateau physiographic province (Fenneman 1931). The major vegetation types in the vicinity of the base include sagebrush shrub-steppe (referred to as big sagebrush-grass), cultivated land, shadscale, and disturbed areas (see Figure M3.4-2). Big sagebrush-grass plant communities are dominated by Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) and various grass species such as Sandberg's bluegrass (*Poa sandbergii*) and squirreltail (*Sitanion hystrix*). Cultivated land contains primarily potato, sugar beet, alfalfa, and grain crops. Shadscale communities are present in some areas surrounding the base; shadscale (*Atriplex confertifolia*), four-wing saltbush (*A. canescens*), and winterfat (*Eurotia lanata*) are the predominant species in these communities. In some areas, winterfat, called white sage by early settlers, dominates the landscape and forms dense monotypic stands. Other areas that have been disturbed by farming activities and/or fires have been seeded with introduced grass species or are occupied by cheatgrass (*Bromus tectorum*) and Medusa-head wildrye (*Elymus caput medusae*). Scattered playa lakes

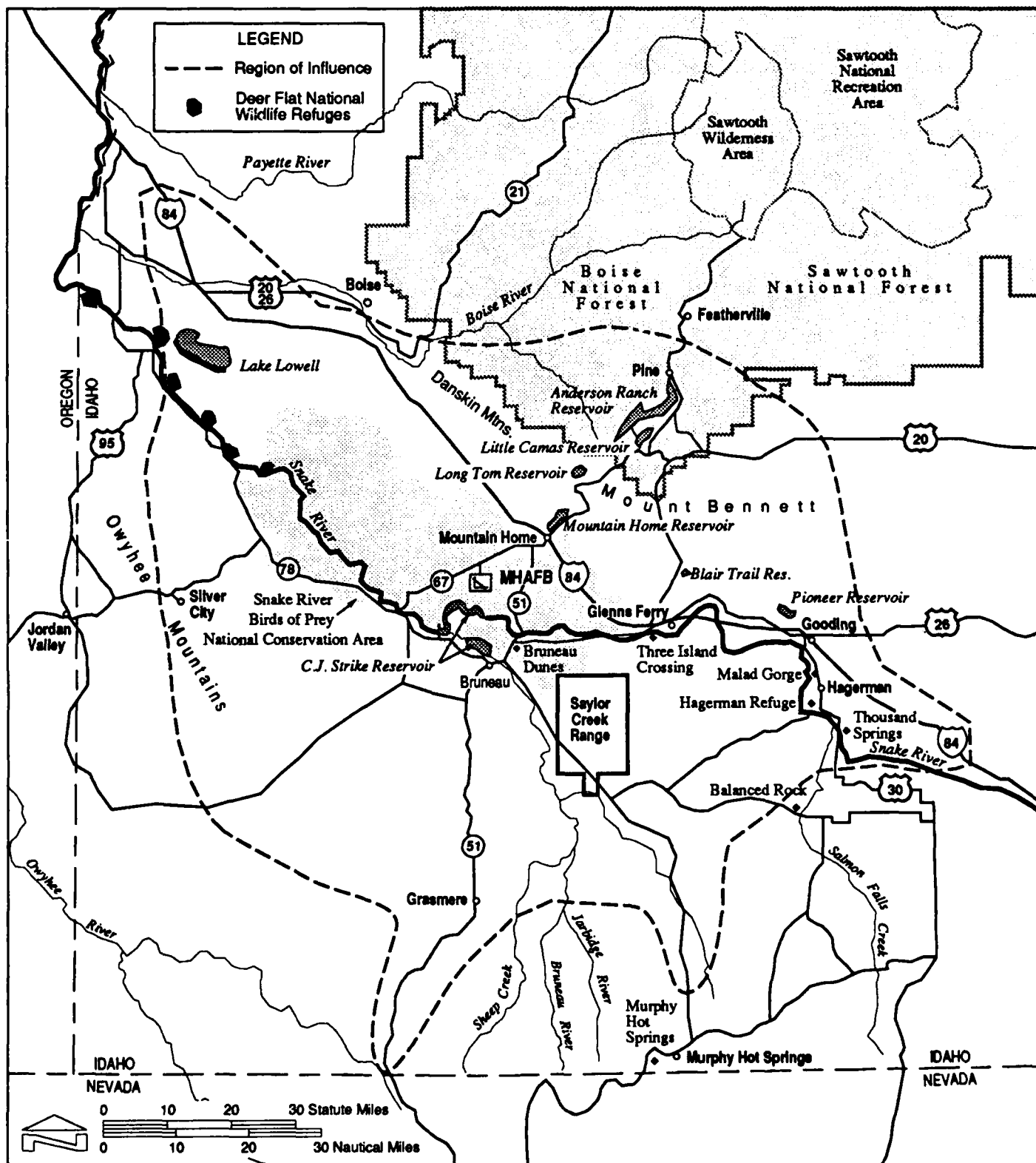


Figure M3.4-1

REGION OF INFLUENCE FOR BIOLOGICAL RESOURCES

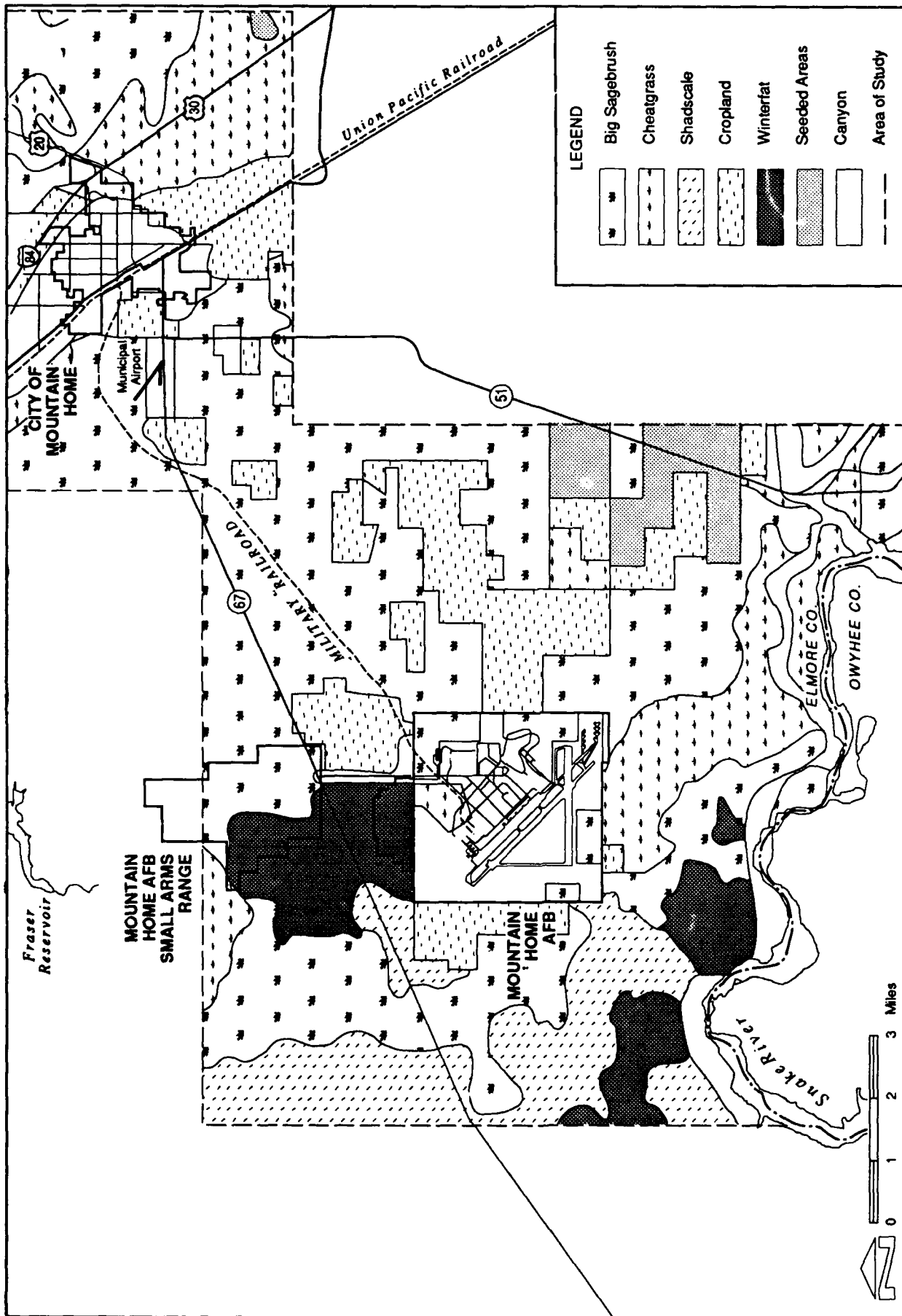


Figure M3.4-2

MAJOR VEGETATION IN THE VICINITY OF MOUNTAIN HOME AFB

that are seasonally or temporarily flooded occur in shadscale and big sagebrush-grass communities adjacent to MHAFB; these areas are habitat for Davis peppergrass (*Lepidium davisii*), a category 2 candidate for federal listing as an endangered species. Smaller playas may provide habitat for montane peppergrass (*Lepidium montanum* var. *papilliferum*), a species that is proposed for candidate status. These plant communities are described more thoroughly in section S3.4.3 of Volume II.

Little undisturbed vegetation occurs on MHAFB. Most areas are occupied by buildings, residences, training-related facilities, runways, streets, sewage ponds, landfill, and rubble. Most open areas are either landscaped or dominated by cheatgrass, and the area along the flight line is regularly mowed. A few moderately disturbed areas consisting of big sagebrush and grasses such as squirreltail and Indian ricegrass (*Oryzopsis hymenoides*) occur on the eastern perimeter and in the northeastern corner of the base. A shallow ephemeral drainage in the northeastern corner contains scattered wildrye (*Elymus cinereus*), but no evidence of riparian vegetation was observed during a reconnaissance survey conducted on October 18, 1989. Playas do exist on the Small Arms Range, but it is not known if they contain Davis peppergrass.

The vegetation in the vicinity of the city of Mountain Home is similar to that of MHAFB. Cropland, pastureland, cheatgrass, and developed areas predominate. Some riparian vegetation is present in scattered areas along the east side canal, which is the outflow from Mountain Home Reservoir.

Vegetation in outlying areas that may be indirectly affected by increased recreational pressures is similar to that occurring within the ROI for the proposed expanded range capability (see section S3.4 of Volume II). Forest vegetation, including western juniper woodland, mountain mahogany chaparral, aspen, and coniferous forest, is present in the Owyhee Mountains, and in the Danskin-Mount Bennett areas.

M3.4.4 Wildlife

Wildlife in the immediate vicinity of MHAFB has been described in the Birds of Prey Area EIS (BLM 1979). Approximately 260 species are known from the area. Factors contributing to the high species diversity and abundance include the local geology, topography, soils, vegetation, and climate.

Rabbits and rodents are very abundant, due in part to the presence of soils that are suitable for burrowing. These species provide a prey base for the numerous birds of prey in the area (e.g., prairie falcons, ferruginous hawks, golden eagles, American kestrels, and several owls). Townsend ground squirrels (*Spermophilus townsendi*) and blacktail jackrabbits (*Lepus californicus*) are particularly important, and their abundance influences reproduction in prairie falcons and golden eagles, respectively (Kochert and Pellant 1986). As a result of these factors, this area has among the highest densities of nesting raptors in the world for a comparable habitat type and size (BLM 1979; Kochert

and Pellant 1986). Most of the nesting activity occurs along the cliffs of the Snake River Canyon while foraging occurs primarily on the adjacent uplands. A variety of other bird species are present as well. These include burrowing owls, black-billed magpies, American crows, common ravens, mourning doves, and several types of sparrow. Many waterfowl species are concentrated near C. J. Strike Reservoir and the Trueblood Wildlife Area. Additional information on common species is provided in section S3.4.4 of Volume II.

Few amphibians occur in the immediate vicinity of the base, but several species of lizards and snakes are present. Common species are the Great Basin fence lizard (*Sceloporus occidentalis biseriatus*), northern side-blotched lizard (*Uta stansburiana stansburiana*), Great Basin whiptail (*Cnemidophorus tigris tigris*), Great Basin gopher snake (*Pituophis melanoleucus deserticola*), and striped whipsnake (*Masticophis taeniatus*).

Due to agriculture, grazing, and urban development, few large mammals, such as deer and pronghorn, are present in the immediate area of MHAFFB. Mule deer occasionally frequent the area, primarily to feed on agricultural crops. This species is more abundant in or adjacent to mountains both northeast and west of the base. Pronghorn occur northeast of the base between Highway 80 and the Danskin Mountains and Mount Bennett (BLM resource maps). No bighorn sheep, elk, or wild horses occur in the immediate vicinity of the base, although elk are found in the mountains to the northeast.

A variety of carnivores inhabit the plains surrounding MHAFFB, including badgers (*Taxidea taxus*) and coyotes (*Canis latrans*).

Caves are present within the ROI, especially along river canyons and other areas of high topographic relief. Caves provide unique habitats for wildlife and microscopic plants and could support sensitive species such as Townsend's big-eared bat. There are no caves on MHAFFB, and none are expected in the immediate vicinity of the city of Mountain Home.

A reconnaissance survey of MHAFFB on 18 October 1989 indicated that most wildlife habitats on the base are moderately to highly disturbed. Common bird species present are those typically associated with human habitation, such as Brewer's blackbirds, English sparrows, and common ravens. Horned larks and meadowlarks were observed in less disturbed habitats along the perimeter fence. Burrowing owls have been reported on and near MHAFFB. A variety of ducks and other water-associated birds frequent the sewage lagoons and at times must be scared away to minimize the hazard of bird-aircraft strikes (personal communication, R. Scheuch 1989). The hazard to aircraft is discussed in section M3.12, Safety. Mammals expected to occur on the base include ground squirrels, an occasional badger, and blacktail jackrabbits. Reptiles common in the area surrounding the base are likely to be present as well.

M3.4.5 Aquatic Biota

No aquatic habitats, other than several small playa lakes, irrigation canals, and ephemeral streams, are present in the immediate vicinity of MHAFB. Mountain Home Reservoir is located just northwest of the city of Mountain Home, and numerous intermittent or ephemeral streams drain the area. The Snake River and its tributaries are south of the base, and numerous streams and reservoirs occur in the northeastern and western parts of the ROI, particularly in the mountains. The Snake River contains white sturgeon (*Acipenser transmontanus*) in free flowing sections. The reach from Bliss Dam to Hammett is the best reproductive area in the state for this species (personal communication, P. Olmstead 1989). It is designated a species of special concern by the Idaho Department of Fish and Game. Northern squawfish (*Ptychocheilus oregonensis*), peamouth (*Mylocheilus caurinus*), channel catfish (*Ictalurus punctatus*), and smallmouth bass (*Micropterus dolomieu*) are abundant. Other species present include brown bullhead (*Ictalurus nebulosus*), mountain whitefish (*Prosopium williamsoni*), bluegill (*Lepomis macrochirus*), black crappie (*Pomoxis nigromaculatus*), three species of sucker (*Catostomus columbianus*, *C. macrocheilus*, and *C. platyrhynchus*), carp (*Cyprinus carpio*), chiselmouth (*Acrocheilus alutaceus*), and redbelt shiner (*Richardsonius balteatus*). Dominant species in C. J. Strike Reservoir are largemouth bass (*Micropterus salmoides*), smallmouth bass, bluegill, black crappie, yellow perch (*Perca flavescens*), and channel catfish (BLM 1979). Numerous streams drain the Owyhee Mountains, Danskin Mountains, and Mount Bennett. Some are perennial, particularly at higher elevations, while others are intermittent. The largest reservoirs are Lucky Peak and Arrowrock east of Boise and Anderson Ranch and Little Camas northeast of Mountain Home. Their aquatic habitats support a variety of plant and animal species ranging from diatoms and algae to insects and fish. Lucky Peak and Arrowrock reservoirs support Coho and Kokanee salmon (*Oncorhynchus kisutch* and *O. nerka*), while Anderson Ranch reservoir contains Kokanee (Simpson and Wallace 1982). Warmwater species, such as bass and catfish, are also present in the reservoirs. Perennial streams usually contain redband trout (*Oncorhynchus mykiss*, formerly *Salmo gairdnerii*), although brook trout (*Salvelinus fontinalis*) have been reported in Jordan Creek and hatchery stock rainbow trout have been planted in several reservoirs (personal communication, P. Olmstead 1989).

M3.4.6 Threatened and Endangered Species

Only three federally listed threatened or endangered species occur within the ROI and around MHAFB: bald eagles, peregrine falcons, and the gray wolf. The eagles winter along the Snake River, primarily near C. J. Strike Reservoir and Deer Flat National Wildlife Refuge (NWR). Peregrine falcons are migrant visitors to the area, and several have been released in the Boise area. Gray wolves are seen infrequently in the Boise and Soldier Mountains. Additional detail regarding the status and distribution of these species can be found in section S3.4.6 of Volume II.

The Bruneau Hot Springs snail is proposed for listing as an endangered species. Two colonies near the town of Bruneau are known; one in Indian Bathtub Hot Spring and the other in Lower Indian Bathtub Hot Spring (Idaho NHP 1989)

Several candidate wildlife species occur within the ROI. Ferruginous hawks (*Buteo regalis*) nest within 2 miles of MHAFFB, and they are observed frequently in the vicinity of the base (Idaho NHP 1989). Long-billed curlews (*Numenius americanus*) nest along the Snake River and multiple sightings are documented within the study area (Idaho NHP 1989). Spotted bats (*Euderma maculatum*) have been observed in caves near Fossil Butte and Deer Flat NWR (near Marsing). Townsend's bat (*Plecotus townsendii townsendii*) has been observed recently near McKinney Butte, and in 1963 near Boise (Idaho NHP 1989).

Candidate aquatic species within the ROI include the Shoshone sculpin (*Cottus greenei*), redband trout, Idaho springsnail (Homedale Springs snail; *Pyrgulopsis* [= *Fontelicella*] *idahoensis*), Bliss Rapids snail (undescribed genus and species), Snake River physa snail (*Physa* sp.), and shortface lanx (giant Columbia River limpet; *Fisherola nuttalli*). Of these, the Shoshone sculpin, Bliss Rapids snail, and physa snail are Category 1 candidates. The Shoshone sculpin inhabits spring-fed streams and the Snake River from Bliss Dam to Kanaka Rapids (BLM 1985a). The Idaho springsnail occurs in muddy areas among boulders and cobbles in the Snake River from Bancroft Springs to Indian Cove Bridge. The other three species are found in free-flowing segments of the Snake River and tributary springs.

Numerous localities of Davis' peppergrass (*Lepidium davisii*), a plant species that is a federal candidate for listing as threatened or endangered, are within 5 miles of MHAFFB. One population is located approximately 0.5 mile north of the perimeter fence of the base; another is reported from a playa approximately 0.1 mile west of the west perimeter fence (Idaho NHP 1989). Playas occur within the Small Arms Range, although it is not known if these locations contain Davis peppergrass. Another taxon, montane peppergrass (*Lepidium montanum* var. *papilliferum*), a proposed federal candidate, was historically known to occur immediately outside the city limits of Mountain Home. Currently, this taxon is known to occur in only three areas. In 1989, a population was identified within 3 miles of the city of Mountain Home (personal communication, R. Rosentretter 1989). One nearby site is located near the intersection of Interstate 84 and Simco Road about 15 miles northwest of Mountain Home. Another site is located along the Swan Falls Road south of Kuna (personal communication, A. DeBolt 1989). Montane peppergrass is edaphically restricted, occurring in very small, young playas that exist as microhabitats within pristine or protected Wyoming big sage communities (personal communication, R. Rosentretter 1989). Although potential habitat exists within the ROI, the likelihood that this taxon would be present on MHAFFB is low because most of the base lacks suitable undisturbed habitat. However, small areas within the big sagebrush communities on-base may include microhabitats for montane peppergrass. This taxon could also occur in the vicinity of the city of Mountain Home.

Other plant species that are considered to be sensitive by the Idaho Native Plant Society and that the BLM is required to protect occur within the ROI. These species would only be affected by increased recreational pressures. Some of these species include cowpie buckwheat (*Eriogonum shockleyi*), giant helleborine (*Epipactis gigantea*), Torrey's blazing star (*Mentzelia torreyi* var. *acerosa*), Owhyee mourning milk-vetch (*Astragalus atratus* var. *owhyeensis*), and thistle milk-vetch (*Astragalus kentrophyta* var. *jessiae*). A rare lichen (*Texasporium Sancti jacobii*) is also reported from within the ROI (personal communication, R. Rosentretter 1989).

M3.5 CULTURAL RESOURCES

M3.5.1 Definition of Resource

Cultural resources consist of prehistoric and historic districts, sites, structures, artifacts and other evidence of human use. These resources can be divided into four major categories: prehistoric archaeological resources, historic resources, architectural resources, and Native American resources.

Significant cultural resources are those considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. Only significant cultural resources warrant consideration with regard to adverse impacts resulting from a project. To be considered significant, cultural resources must meet one or more of the criteria for inclusion on the National Register of Historic Places (36 CFR 60.4). Section M4.5.3 outlines the relationship of specific criteria to particular resource categories. Significance of Native American resources is determined according to criteria derived from the Native American Religious Freedom Act of 1978, 36 CFR 60.4, Advisory Council on Historic Preservation (ACHP) guidelines, and consultation with affected groups.

M3.5.1.1 Prehistoric Archaeological Resources

Prehistoric archaeological resources consist of the physical remains of human activity that predate the advent of written records in a particular cultural and geographic region. These resources include archaeological sites, artifacts, rock art (i.e., pictographs and petroglyphs), and other evidence of prehistoric human behavior. For management purposes, two major classes of prehistoric archaeological resources have been defined: sites and isolates. Sites are an aggregation of artifacts, features (e.g., hearth, structure), and/or other residues of human activities. Site types include lithic scatters, quarries, hunting sites, camp sites, rock alignments, rock art sites, and rockshelters. Isolates generally consist of single artifacts not associated with other artifacts, features, or cultural remains.

M3.5.1.2 Historic Resources

Historic resources consist of the physical remains or sites resulting from human activities postdating the advent of written records for an area. Such resources include archaeological sites, isolates, structures, roads, trails, mines, artifacts, and documents. Locations associated with persons or events significant to the history of an area also constitute historic resources. Historic resources can include such things as single cartridges, can dumps, and military buildings.

M3.5.1.3 Architectural Resources

Architectural resources consist of standing structures potentially having historic or aesthetic significance. Such resources often co-occur with historic archaeological sites of the same age. To receive consideration for protection under federal cultural resource laws, architectural resources must be at least 50 years old. More recent resources may also be considered for protection if they manifest the potential to gain significance in the future or if they relate to an important recent event or period in U.S. history.

M3.5.1.4 Native American Resources

Native American resources consist of sites, artifacts, and materials valued by contemporary Native Americans. These resources also contribute to the persistence of traditional Native American culture. Native American resources may include the complete range of prehistoric sites and artifacts, locations of historic occupations and events, and historic and contemporary sacred and ceremonial areas. In addition, such resources may consist of materials used to produce implements and sacred objects; traditional hunting, gathering or herding areas; and other botanical, biological, and geological resources valued by contemporary Native American groups.

M3.5.2 Region of Influence

The ROI for cultural resources includes all portions of MHAFFB, the Small Arms Range, the city of Mountain Home, and a 0.5-mile wide corridor along each side of Highway 67 between the base and the city (see Figure M3.5-1). The ROI encompasses approximately 18,175 acres. Definition of the ROI derives from analysis of the kinds and locations of impacts anticipated as a result of the realignment. Within MHAFFB, cultural resources may be subject to direct impacts resulting from construction of new workshops, housing, roads, and other facilities, as well as from modification of existing buildings.

The Small Arms Range, located 1.5 miles north of the base, is included within the ROI, although the base realignment involves no plans for modification of the range. Due to the addition of personnel to the base, the potential for indirect impacts (e.g., illegal collection of artifacts) at this range warrants consideration.

The portion of the ROI encompassing the city of Mountain Home and the Highway 67 corridor was defined to consider the potential for indirect impacts to cultural resources resulting from new housing and utility construction associated with projected increases in off-base civilian and military populations (see section M4.10).

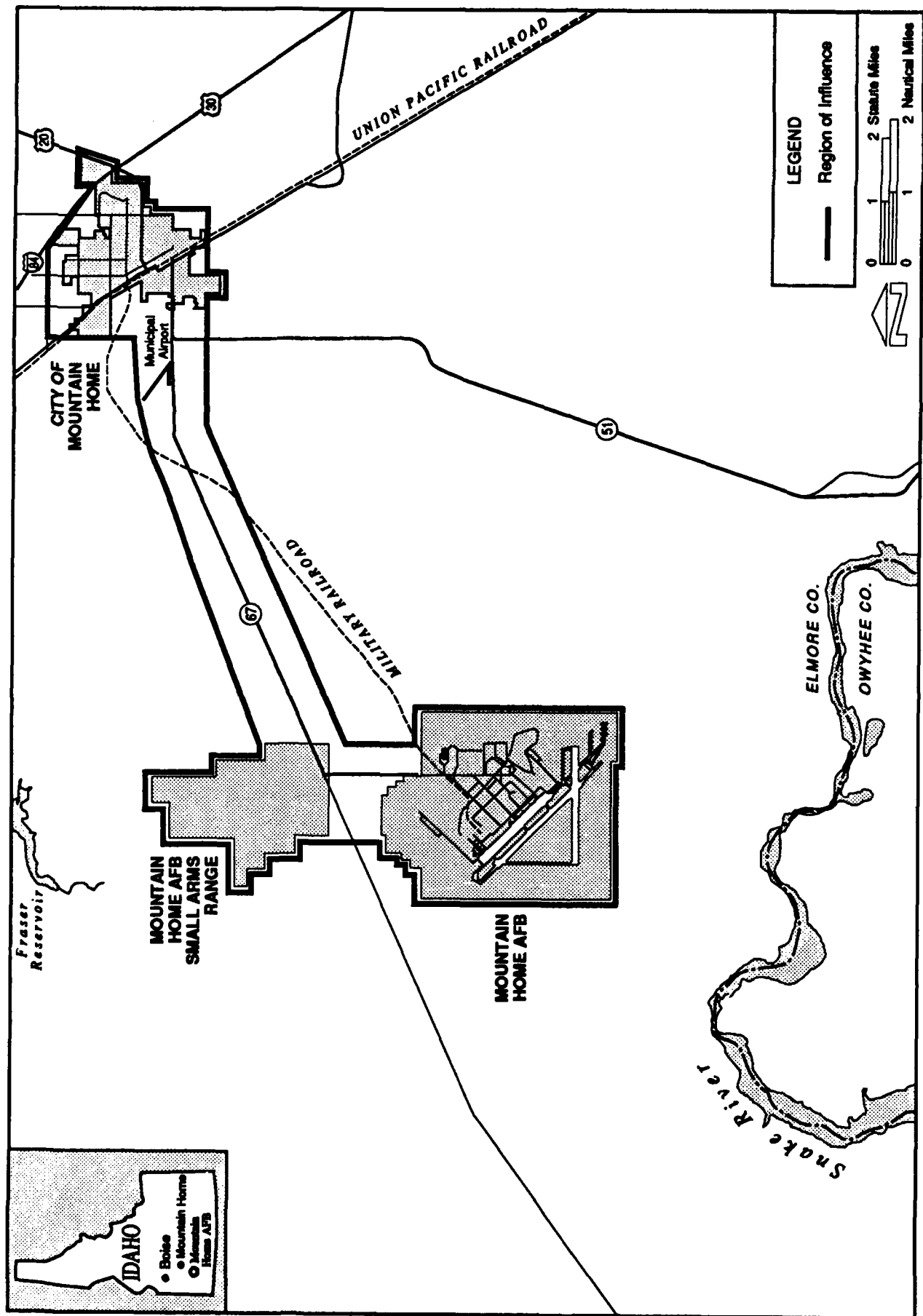


Figure M3.5-1
 REGION OF INFLUENCE FOR CULTURAL RESOURCES

More intensive recreational use (e.g., camping, hunting, ORV activities) of the region stemming from the realignment and its related population increase represents another source of possible indirect impacts to cultural resources. Such increased use heightens the potential for vandalism and ground-disturbing activities. Recreation patterns (see section M3.8) for the region suggest that areas within a 1.5- to 2-hour drive from MHAFB probably will receive the most intensive use by on-base and off-base populations associated with the realignment. This travel radius encompasses several recreation areas containing or near significant cultural resources (e.g., Snake River BOPA, Silver City).

M3.5.3 Prehistoric Archaeological Resources

M3.5.3.1 Previous Research

Only a small portion (412 acres or 2 percent of the total area) of the ROI has been surveyed, so little information on the precise nature and location of cultural resources within the ROI is available (see Appendix G). No cultural resource surveys have been conducted on MHAFB; only 150 acres in the southern portion of the Small Arms Range and 262 acres of the remainder of the ROI have been examined (Petersen and Geer 1987).

However, seven surveys have inspected 84,480 acres in the vicinity of the ROI, especially to the north and west. The most extensive survey near the ROI examined 84,430 acres within the Idaho National Guard Training Area (Addington 1987), located approximately 5 miles northwest of MHAFB. Based on the results of this survey, Addington (1987) estimated that the Idaho National Guard Training Area contained a low density of prehistoric and historic cultural resources. However, the techniques used in this survey potentially resulted in substantial underestimates (up to 56 percent) of the number of cultural resources present within the area. Therefore, caution must be used when applying the density and patterning identified in the training area survey to predict the archaeological sensitivity of the ROI. Appendix G provides a detailed discussion of this survey and the factors potentially affecting the reliability of its results.

M3.5.3.2 Prehistoric Archaeological Resource Inventory

Available data sources revealed one documented prehistoric archaeological resource within the ROI: a single flake located within the Highway 67 corridor. Within the immediate vicinity of the ROI, the prehistoric archaeological resources consist of only a small lithic scatter and an isolate.

Within the nearby Idaho National Guard Training Area, Addington (1987) identified 11 isolates and 30 sites consisting of lithic scatters (25), possible temporary camps (4), and a possibly prehistoric rock alignment. The patterning of these resources reflects associations between water sources and lithic scatters; sheltered locations (i.e., lava tubes) and temporary camps; and isolates and open areas.

Addington (1987) estimated prehistoric site density averaged about one site per 2,800 acres. However, because the techniques used in this survey may have resulted in an underestimate of site density, actual site density may be 56 percent higher, or one site per 1,242 acres.

Despite the limitations described above, the patterns noted in the Idaho National Guard Training Area provide a foundation, albeit tenuous, from which to assess the archaeological sensitivity of the ROI. Using only Addington's (1987) site density per acre, the ROI (ca. 18,175 acres) might include six prehistoric sites. If actual site density is 56 percent greater than Addington's estimate, the ROI might contain up to 14 sites.

However, two factors suggest that the ROI possesses a much lower number of prehistoric sites. First, structures, roads, parking lots, and other modern developments cover approximately 40 percent (ca. 7,270 acres) of the ROI (see Appendix G). These disturbed areas retain a negligible potential to contain intact significant prehistoric sites. Elimination of the disturbed portions of the ROI reduces the area potentially containing sites to 10,905 acres. Using density estimates from the Idaho National Guard Training Area (Addington 1987) survey (i.e., 1 per 2,800 acres) and the adjusted estimates (i.e., 1 per 1,242 acres), the number of presently unidentified prehistoric sites within the undisturbed portions of the ROI might range from four to nine.

Second, the ROI contains few physiographic settings that previous studies have considered archaeologically sensitive. Based on the patterning derived from the Idaho National Guard Training Area study, the prehistoric cultural resources most likely to be located at the settings within the ROI consist of lithic scatters and isolates. These resource types (especially isolates) tend to lack the characteristics necessary to warrant designation as significant cultural resources.

As indicated by the previous discussion, the ROI possesses a low potential to contain significant cultural resources because:

- o Historic and modern development has disturbed large portions of the ROI;
- o The ROI contains few settings considered archaeologically sensitive; and
- o The types of cultural resources likely to occur within the ROI often fail to meet significance criteria (see section M4.5.3).

Outside the ROI, recreation areas likely to receive increased use due to population growth stemming from the realignment contain abundant and significant cultural resources (see Appendix G). The Snake River canyon south, southeast, and west of MHAFB represents the most prominent of these recreation areas. This stretch of the river canyon, which contains hundreds of cultural resources,

including the Guffey Butte/Black Butte National Register District and segments of the Oregon Trail, offers both developed and primitive recreation opportunities. Other recreation areas within a 2-hour drive from MHAFB that contain or provide access to locales rich with cultural resources include Murphy Hot Springs, Silver City, Anderson Dam, and the Owyhee Front. In addition, the public lands within 2 hours of MHAFB receive extensive use for hunting, fishing, rafting, hiking, and ORV activities. Many locations (e.g., river canyons, creeks) favored for these recreational pursuits also contain abundant significant or potentially significant cultural resources.

M3.5.4 Historic and Architectural Resources

M3.5.4.1 Previous Research

As noted above, only a limited portion of the ROI has been surveyed. Although no inventory of potentially historic structures has been compiled for the base, available records indicate that the Idaho State Historical Society identified and documented significant historic buildings within the city of Mountain Home in 1972 and in subsequent years. This effort also included evaluation of the historic and architectural characteristics of the buildings according to National Register criteria.

M3.5.4.2 Historic and Architectural Resource Inventory

A single documented historic archaeological site lies within the limits of the ROI. This small, ephemeral site, located on the plain in the eastern portion of the Small Arms Range, consists of shepherd and cowboy camps. Such camps, dating from the 1880s to the 1950s, represent the dominant type of historic site located in the vicinity of the ROI. Available records and site patterning for the vicinity of the ROI suggest that cattle and sheep grazing formed the primary activities conducted historically in the area outside the city of Mountain Home (see Appendix G). Surveys in this vicinity have revealed a low density of historic sites (1 site per 2,550 acres).

Based on existing data, the patterning of sites indicates more concentrated historic activity west of the ROI (see Appendix G). This area includes a large intermittent drainage (Canyon Creek) and exhibits more topographic relief than the ROI. Possibly the creek and broken terrain provided water and sheltered locations preferred by the shepherders or cowboys. In addition, many of these sites cluster in the vicinity of Highway 67, which represents an historic road.

The absence of large creeks and broken terrain within MHAFB, the Small Arms Range, and the Highway 67 corridor suggest that these areas may have received limited use historically. This factor, combined with the low density of historic sites in surveyed areas east of the base, indicates that these portions of the ROI possess a low potential to contain significant historic resources. The highway

corridor may include a slightly higher density of historic sites, but they are likely to consist of dumps or can scatters that rarely meet significance criteria.

MHAFB, founded in 1942, contains 19 buildings dating to the World War II era; these include five hangars, nine warehouses, a chapel, and four general-purpose buildings. Although none of the buildings has been formally evaluated, a brief inspection led the Idaho Deputy SHPO to conclude that the hangars and possibly the chapel represent potentially significant resources. However, realignment plans involve no modification or demolition of the World War II buildings.

The city of Mountain Home contains nine historically and architecturally significant structures listed on the National Register (see Figure M3.5-2). Located in the southwestern and older portion of the city centered around the railroad tracks, these structures represent the surviving examples of specific architectural and construction styles in the region. Many are also linked to events or people important to the history of the city. In addition, the city contains numerous other houses and structures (e.g., barns, railroad underpass) that possess potentially important historic and architectural characteristics.

Because its development dates back to the 1880s, the city may include other unidentified historic and architectural resources. Historic and architectural resources are likely to be more concentrated near the original core of the city within a few blocks of the railroad tracks. The city, especially the core area, may also contain historic archaeological sites covered by modern structures.

Many recreation areas in the vicinity of the ROI contain significant historic resources. The nearest and most prominent is the Snake River BOPA, which includes several structures and sites listed on the National Register. Silver City includes a National Register Historic District with numerous structures and features. Additionally, many areas used for primitive recreation (e.g., Camas and Pole creeks) contain potentially significant historic resources.

M3.5.5 Native American Resources

At present, Native Americans in the region have not identified specific areas considered sacred or important. However, a previous study (HDR 1981) of the Shoshone, Paiute, and other groups occupying the Great Basin defined the general types of cultural resources likely to be important to the Shoshone-Paiute people now residing in southwestern Idaho. These resources include archaeological sites, burials and burial grounds, rock art, caves and mountains, water sources, locations of historic events (e.g., battles), trails, and areas traditionally used for hunting and gathering. Such resources commonly occur in certain physiographic and environmental settings, including major drainages, springs, mountains, and rock outcroppings. However, the ROI associated with the MHAFB realignment generally lacks these settings. Therefore, the ROI is unlikely to contain resources and locations important to contemporary Native Americans.

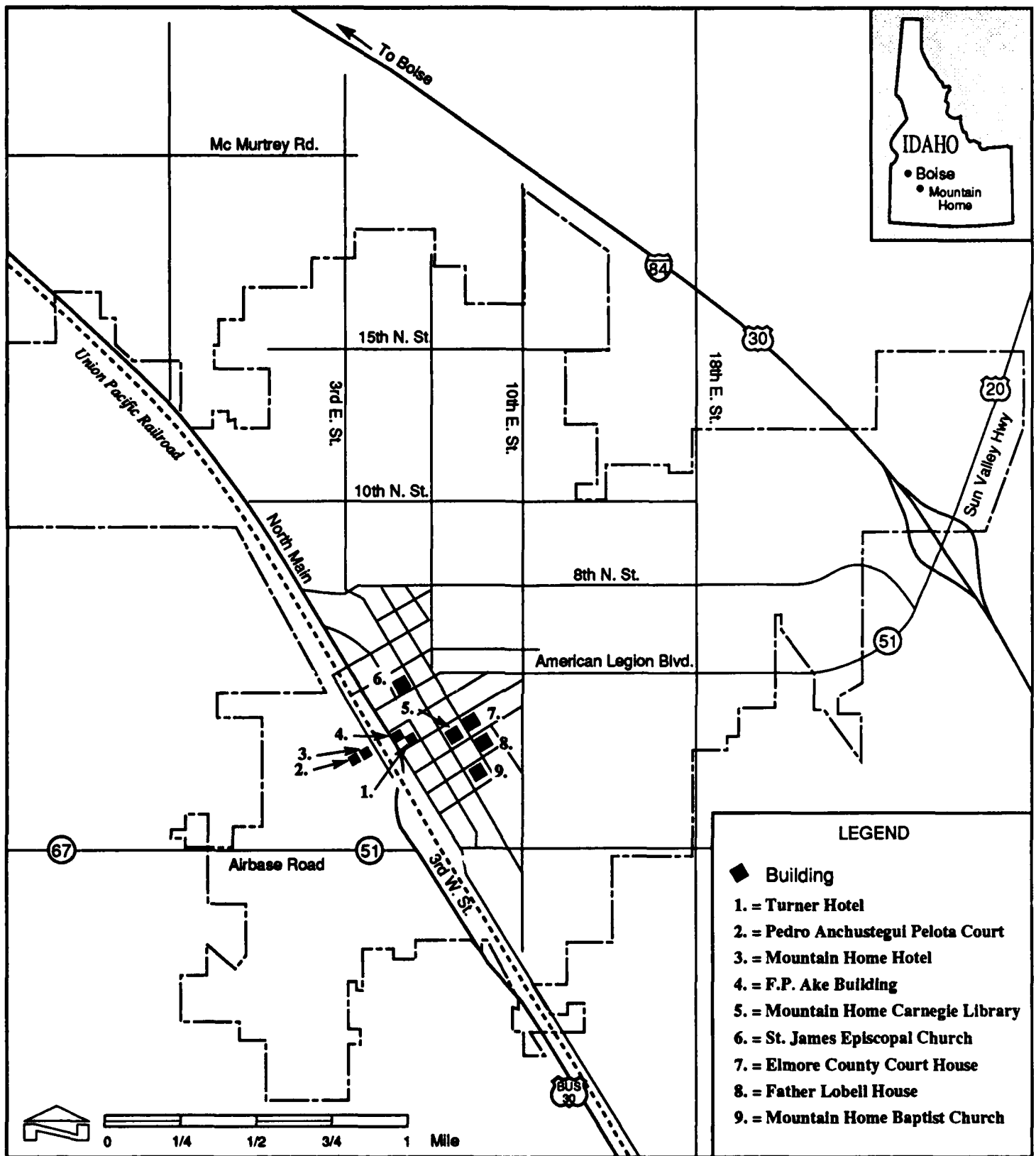


Figure M3.5-2

**HISTORIC AND ARCHITECTURAL RESOURCES LISTED ON THE NATIONAL REGISTER
CITY OF MOUNTAIN HOME**

In contrast, off-base areas used for recreation potentially include resources important to contemporary Native Americans. Specific locations of sacred areas and traditional use areas remain well guarded, although Native American informants indicate that more than 100 sites are within southwestern Idaho. It seems probable that some of these sites occur within developed recreation areas, while numerous other resources (e.g., rock art) important to Native Americans may be located in off-base areas used by hunters, hikers, and ORV enthusiasts.

M3.6 VISUAL RESOURCES

M3.6.1 Definition of Resource

Visual resources are the natural and manmade features that give a particular environment its aesthetic qualities. A visual impression of an area is derived from the type, arrangement, and contrast between these features. Although each viewer's perception may be slightly different, an overall landscape character can be assigned to an area and impacts to that character can be assessed.

M3.6.2 Region of Influence

The ROI for visual resources includes MHAFB and a surrounding 1-mile zone; an elongated zone coinciding with the flight path into and from Runway 30 that crosses Highway 67 to the northwest, Highway 51 to the southeast, and the Snake River to the south; a 1-mile corridor along Highway 67 extending from the southwestern limit of the city to the MHAFB entrance road and continuing along Grand View Road for approximately 7 miles to the southwest; and the city of Mountain Home (see Figure M3.6-1).

The ROI was defined to account for potential *realignment impacts to visual resources* resulting from on- and off-base construction and the increase in aircraft activity at MHAFB. Most major construction will occur on base, and most realignment-induced off-base construction is expected to be residential in nature and located in or around the city of Mountain Home. No expansion of the current road system has been proposed for this area, so Highway 67 represents the primary route from which on-base construction may be visible and affect the visual setting. Because aircraft entry and exit routes traverse Grand View Road and highways 67 and 51 at fairly low altitudes, evaluation of potential visual impacts to travelers along these roads necessitated their inclusion in the ROI.

M3.6.3 Visual Setting

The ROI lies in the Columbia Plateau physiographic province. The natural landscape is characterized by relatively flat sagebrush steppe. Although the terrain generally allows for expansive and distant views, portions of the ROI contain localized topographic undulations that screen long-distance views.

M3.6.3.1 Mountain Home Air Force Base

MHAFB is situated in Elmore County and lies approximately 10 miles southwest of the city of Mountain Home along State Highway 67. The 9-square-mile area of the base is delineated by a 3-strand barbed-wire metal post fence. Most of the existing on-base development is well within the base

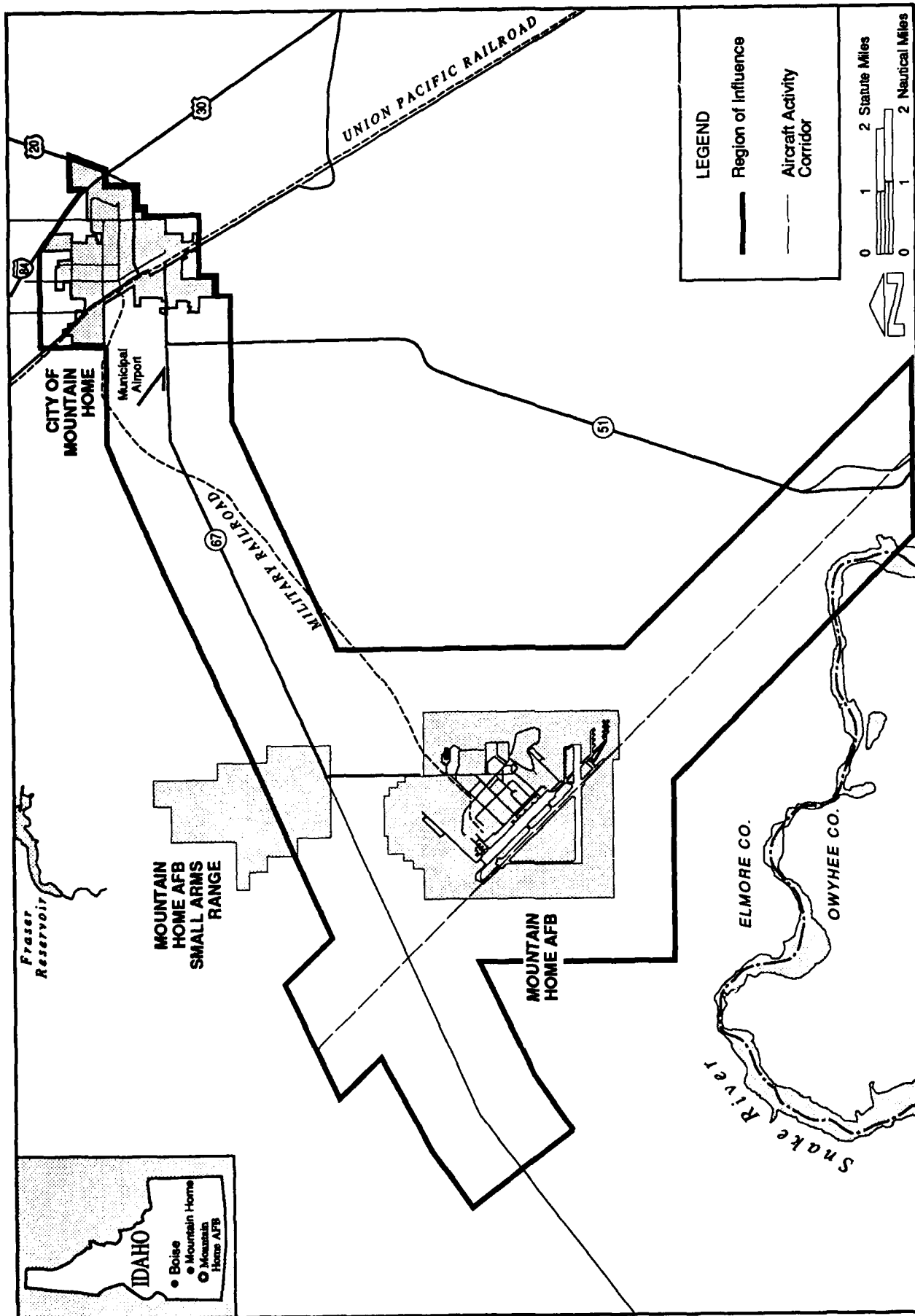


Figure M3.6-1
REGION OF INFLUENCE FOR VISUAL RESOURCES

boundaries. Although no on-base visual resources management plan exists, MHAFB and its vicinity have been identified as an area that can accommodate projects or activities (e.g., building construction) that contrast with the characteristic landscape and attract the viewer's attention (BLM 1982). On the base, compatible use activities have been located in close proximity to one another and residential areas are located away from the aircraft operating area. The abundance of trees on base, especially in residential areas, provides screening between buildings.

A field analysis of MHAFB was performed to establish the visual setting of the base. Views from six representative viewpoints (VP) throughout the base were analyzed (see Figure M3.6-2). The photographs discussed below describe these representative views. Figures M3.6-3 and M3.6-4 show an aerial view (VP16) of the base approaching from the south. As the pictures illustrate, the development (e.g., structures, facilities) on the base is fairly dispersed with numerous trees and open spaces that help break up the developed areas. Given the relatively flat character of the base, intervening trees or buildings often screen views of nearby structures and facilities. Developed outdoor recreation areas, such as the 18-hole golf course located in the eastern portion of the base, provide additional green or open space. Outside the flightline, shops, and other operations facilities, the configuration of MHAFB exhibits a town-like visual setting. Most of the periphery of the base lacks development and structures.

Analysis and photographs from viewpoints 12, 8, and 15 (see figures M3.6-5 through M3.6-7) establish the flat, undeveloped, yet sometimes disturbed, sage and grass plains characteristic of the periphery of the base. A view looking north from VP12 shows a power line sited through an area of rubble and fill (Figure M3.6-5). Similarly disturbed rubble and fill areas occur in a number of locations on the periphery of the base. The visual setting of the northeast corner of the base is shown in Figure M3.6-6. The photograph was taken from VP8 standing at the northern edge of the recently completed hospital. Figure M3.6-7 shows a photograph taken from VP15 looking east to a weed-covered area near the golf course.

Views from VP10 and VP14 (see figures M3.6-8 and M3.6-9) reflect the visual character of the interior of the base. A view to the industrial and more developed areas of the base is shown in Figure M3.6-8. From this viewpoint (VP10), a water tank, fuel storage tanks, and maintenance and storage facilities are visible to the south of the railroad tracks. Figure M3.6-9 presents the view of the southcentral section of the base from VP14. The view is directed northwest along B street to a hangar and a number of different facilities on the left, a new building screening the base of a water tower in the center, and on the right is residential area located west of the golf course. Numerous trees have been planted which enhance the visual landscape and provide screening for the residential units.

As captured in the previously described photographs, the visual skyline and visual setting of MHAFB exhibits a relatively low degree of complexity. Distinctive focal points are rare due to the flat character of the base and the presence of numerous screening features (e.g., trees, buildings). The highest

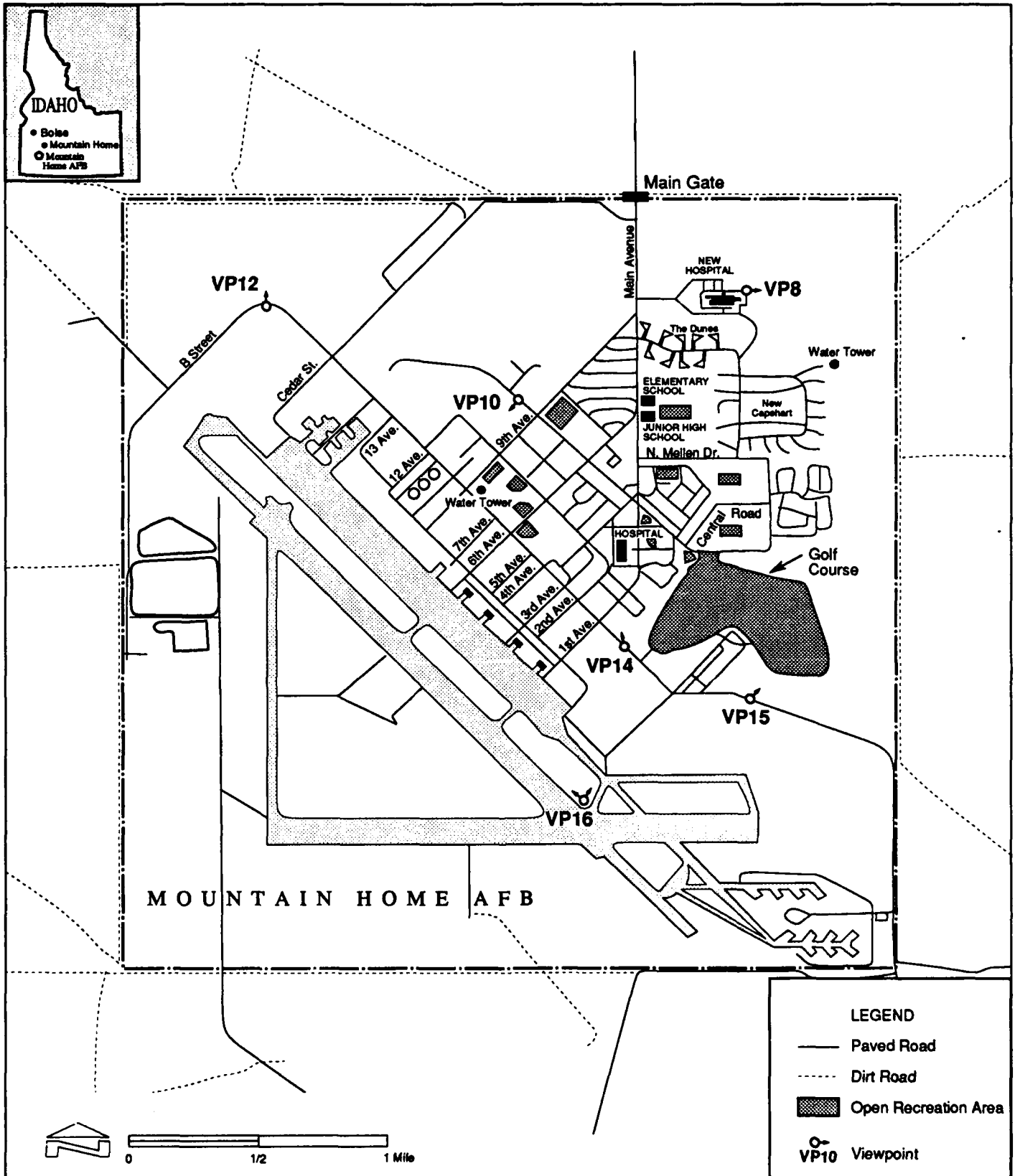


Figure M3.6-2

BASELINE VISUAL ANALYSIS VIEWPOINTS FOR MHA FB



Figure M3.6-3 (VP16) The western portion of Mountain Home AFB, as shown in this aerial view from the south, includes most of the operations buildings and facilities such as the large hangars and runway apron seen in the foreground. The largest and most visually evident structures on base are dispersed throughout this area.



Figure M3.6-4 (VP16) In contrast to the western portion of the base, tree-lined roads, military family residences, and recreation areas create a neighborhood setting in the eastern portion of the base. The trees and the arrangement of roads help to screen views of the remainder of the base.

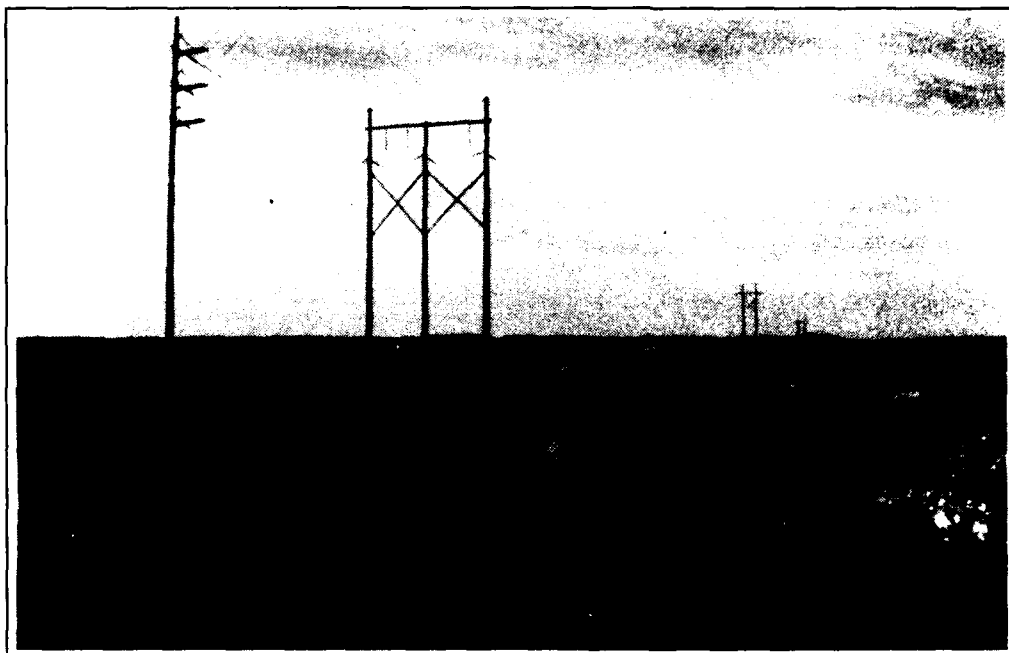


Figure M3.6-5 (VP12) Extensive dumps consisting of rubble from demolished buildings cover portions of the base's margin. The dumps, like this one near the northern edge of the base, result in a modified visual landscape.



Figure M3.6-6 (VP8) Open plains of sage and grasses, characteristic of the region, extend into the north-eastern (shown here) and southeastern margins of the base, providing broad vistas and views of distant mountains.

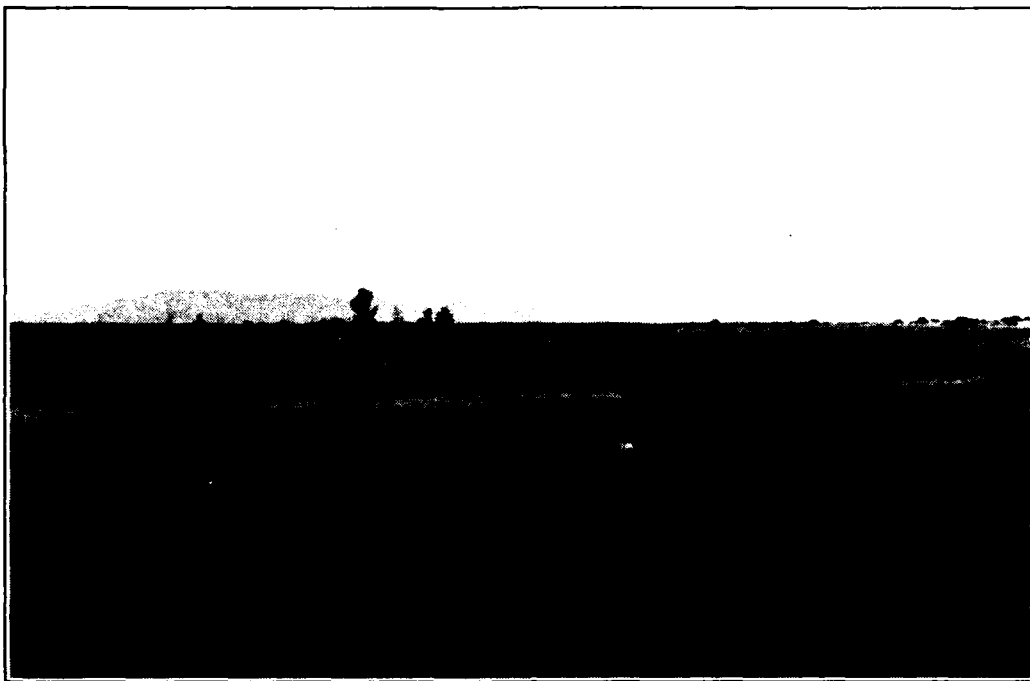


Figure M3.6-7 (VP15) Southeast of the on-base residential area, weeds and grasses typical of the area surround the irrigated golf course. The open space and vegetation of the golf course enhance the visual landscape and provide a "community" atmosphere for the residents.

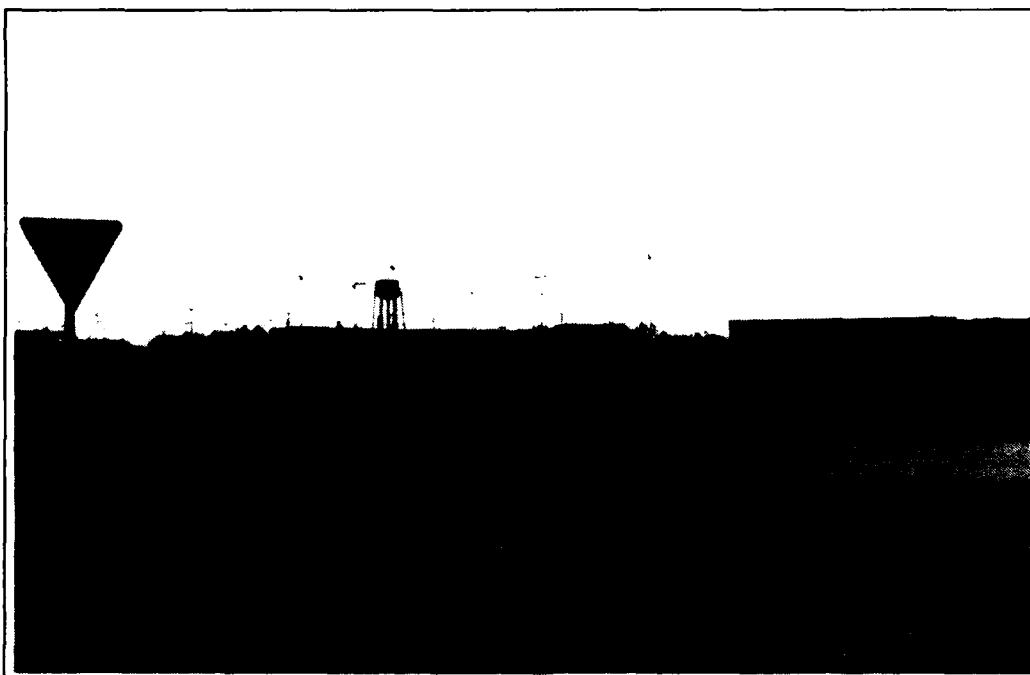


Figure M3.6-8 (VP10) Storage tanks, warehouses and mechanical shops dominate this view from FamCamp to the northwestern portion of the base.

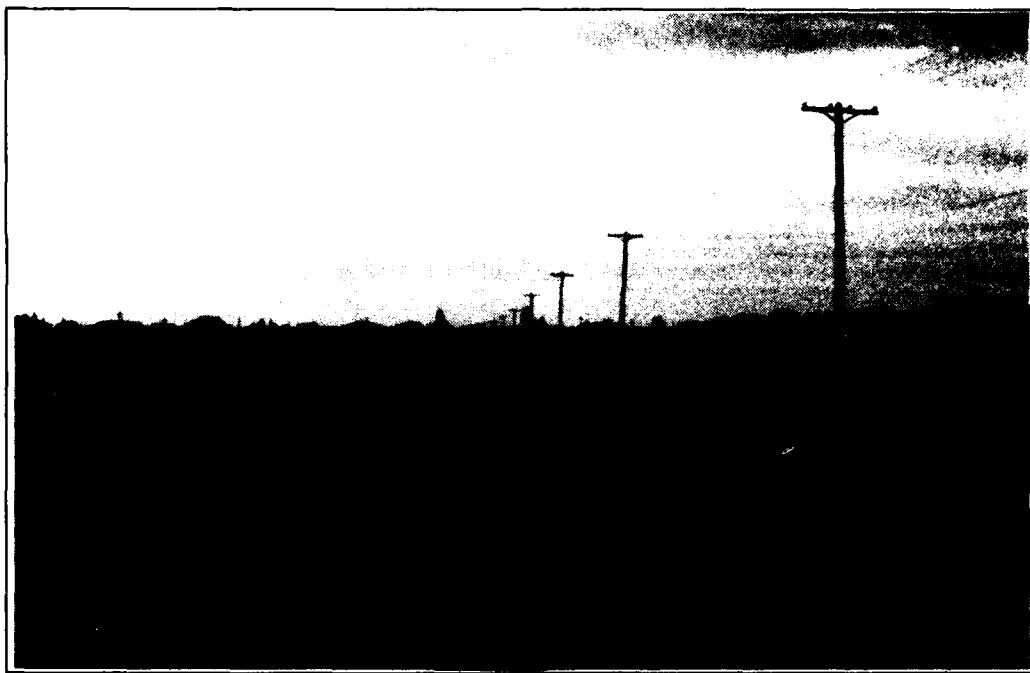


Figure M3.6-9 (VP14) In addition to enhancing the visual landscape, the abundance of trees in the eastern part of the base provides screening between the residential areas and softens the industrial character of the buildings.



Figure M3.6-10 Distant views to the sagebrush plains are plentiful along Highway 67. Utility poles, road signs, and scattered houses compete for visual attention along the road. No scenic designation has been assigned to Highway 67.

structures on base are the two water towers located in the northern part of the base. The tower near the industrial area is over 100 feet tall, while the tower near the new residential area is over 140 feet tall (see Figure M3.6-2). Other significant structures in terms of height include the aircraft control tower, power and telephone lines, and the runway light poles. On-base development is primarily single story, but a few 2- and 3-story buildings do exist. On-base buildings include aircraft hangars, maintenance buildings, administration building, fire houses, chapels, dining halls, dormitories, and family housing.

M3.6.3.2 State Highway 67 and Grand View Road

Highway 67 connects the city of Mountain Home to MHAFB; Grand View Road intersects Highway 67 approximately 1.75 miles north of the base and extends southwest to the town of Grand View. Highway 67 between the city of Mountain Home and the base was originally a two-lane road, but it was upgraded recently to a four-lane highway to accommodate the commuter traffic to the base. Neither Highway 67 nor Grand View Road is designated as a scenic road within the ROI. The only scenic areas are located along Grand View Road where it crosses the Snake River, approximately 15 miles southwest of the base. In a BLM study (1982), these routes and their adjacent lands within the ROI have been categorized as areas for which projects or activities may be visually evident, but must remain subordinate to the existing visual setting.

Travelers along Highway 67 generally have expansive views of the sagebrush plains leading up to distant mountains on the horizon. However, a few localized topographic undulations block these views along segments of the road between the city of Mountain Home and MHAFB. Barbed wire fences, telephone lines, and a few structures scattered along the route compete with the expansive natural landscape for the traveler's attention. Figure M3.6-10 is a view of the highway traveling southwest toward the base from a viewpoint approximately 2.5 miles southwest of the city of Mountain Home. As shown, the convergence of lines created by the road creates focal point sensitivity along the road rather than toward the base. MHAFB is not consistently visible along Highway 67 until it intersects with Grand View Road. Consistent but oblique views of MHAFB occur along Grand View Road for a distance of approximately 3 miles. Southwest of this point, views of the base are limited to nonexistent.

M3.6.3.3 City of Mountain Home

Ten miles northeast of MHAFB lies the city of Mountain Home, whose origins date back to the 1880s. Historic buildings are located primarily in the older part of town centered around the railroad track. There are nine documented historically and architecturally significant structures within the city, yet many more undocumented historic buildings exist.

As the city grew, it expanded in a northeast direction toward Interstate 84. Today, the city is dominated by residential development, typified by single-family dwellings with tree-lined backyards

(see Figure M3.6-11). Mountain Home exhibits a low, visually uncomplex skyline characterized by single and two story buildings. Due to the dispersed and flat character of the city, no views, structures, or other distinctive focal points draw a viewer's attention when approaching the city by road. Figure M3.6-12 is a view of the main street of Mountain Home. The abundance of trees on the street, which in addition to enhancing the visual quality of the setting, provide screening to other buildings and roads. The city of Mountain Home has been assigned the same visual rating as Highway 67; projects or activities may be evident, but must remain subordinate to the basic visual character of the setting (BLM 1982).

M3.6.3.4 Aircraft Activity Corridor

Most flight operations currently utilize Runway 30, which runs southeast to northwest through the western edge of MHAFB. Aircraft that take off from MHAFB head into the prevailing northwesterly winds, while landing aircraft approach from the southeast. During the summer months when the winds shift, takeoffs head into the southeast and landings approach from the northwest.

At the southeastern end of the runway, either activity -- a takeoff climbout or landing approach -- would most likely cross Highway 51, one mile north of where the highway crosses the Snake River. At the northwest end of the corridor, either action would cross Grand View Road approximately 3 miles southwest of the base entrance road. In 1988, MHAFB experienced a total of 56,668 operations (i.e., aircraft takeoffs or landings).

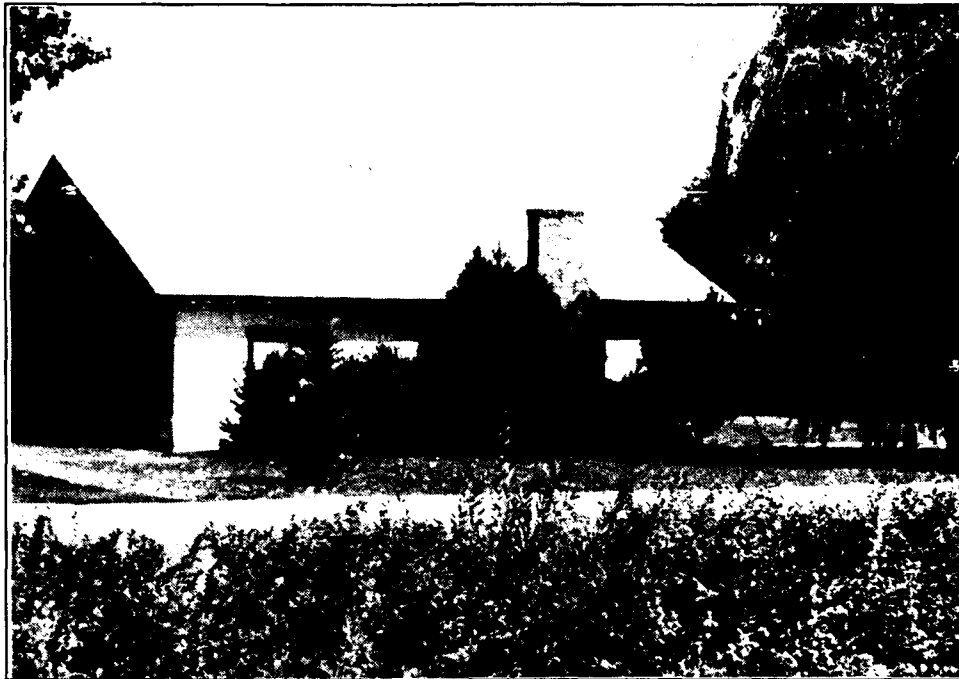


Figure M3.6-11 Single-family single-story homes predominate in the residential section of the city of Mountain Home. Private yards with lawns and tree lined fences are found in most residential areas.



Figure M3.6-12 The main street of Mountain Home (as shown) is lined with trees that provide screening to nearby buildings and streets. The prevalence of single and 2- story buildings in the central business district contributes to the low complexity of the city's visual skyline. In addition, the screening provided by

M3.7 EARTH RESOURCES

M3.7.1 Definition of Resource

Earth resources discussed in this section include topographic features, soils, geologic features, mineral resources, seismicity, cave resources, and paleontologic resources. These resources can have scientific, economic, and recreational value.

M3.7.2 Region of Influence

The area that may be affected by realignment is part of a generally broad, flat plateau known as the Mountain Home Plateau and includes MHAFB and the city of Mountain Home. Specific locations subject to direct geological impacts on earth resources include all areas disturbed by construction of on-base projects described in Table 2.1-2. Cave and paleontological resources may also be affected by recreational activities. It is assumed that most of the increased recreational use associated with additional population will take place within a two-hour drive of MHAFB (see section M3.8.6, Recreation).

M3.7.3 Geology

The Mountain Home Plateau overlies widespread lava flows. These flows slope gently to the southwest filling the area between the Danskin and Boise Mountains to the northeast and the Owyhee Mountains to the southwest. The uniformity and large total thickness of these flows account for the plateau's overall flatness.

The lava flows in this area are part of the Snake River Basalt Group. These rocks are younger but similar to those of the more-extensive Columbia River Basalt Group to the northeast. Columbia and Snake River Basalt Group rocks cover an area of about 77,000 square miles in Oregon, Washington, and Idaho, comprising the largest Cenozoic basalt field in North America. Most of the Columbia River basalts were deposited during a 3.5-million-year period from 17 to 13.5 million years ago. However, the Snake River Basalt Group rocks are less than 700,000 years old (Maley 1987). Some of the most recent flows, like those at Craters of the Moon, occurred within the past 2,000 years. In addition to volcanic rocks, this part of the Mountain Home Plateau contains glacial-outwash-plain gravels, lake-bed deposits, and recent alluvium (Bond 1978).

The city of Mountain Home and MHAFB lie on upper Pleistocene basaltic lavas mantled with thin alluvium and colluvium. Middle Pleistocene lava flows lie beneath these younger flows and are exposed where the upper Pleistocene flows are missing. Glacial-outwash plains spreading out from the

Boise Mountains lie to the northwest, but do not reach this area. The Snake River Valley to the south and southeast contains sedimentary units of Pliocene and Pleistocene Age as well as younger terrace gravels. Extensive middle-Pleistocene lake bed deposits were laid down when lava dammed the Snake River. Recent alluvium mantles the lava in many places. The most extensive deposit of recent alluvium forms the plain around the city of Mountain Home. Additionally, diatomites and limestones also occur in the Snake River area.

Various economic deposits enrich the general area. Several quarries of crushed basalt located in and near the city of Mountain Home (Hustedde et al. 1981) provide materials used for roadway and other construction purposes. Abundant gravel deposits along the Snake River and cinder deposits resulting from volcanic eruptions provide both metal and aggregate. Clay from old lake beds provides brick-making material. Small amounts of placer gold lie within the gravels of the Snake River; currently there are two active operations near Grand View (personal communication, M. Hilliard 1989). On MHAFB, the only evidence of the use of mineral resources are a few borrow pits (USAF 1989) that suggest the presence of alluvial or colluvial deposits. The small area of the base and the large aggregate resources along the Snake River show that deposits on the base are minimal compared to the region's mineral resources.

Other resources in the general area include oil, gas, and geothermal. Actual development potential of these resources is low, and industry interest is negligible. Current geothermal leases exist in the Castle Creek Known Geothermal Resource Area (KGRA) that lies northwest of Grand View and south of the Snake River.

M3.7.4 Topography

The area containing MHAFB and the city of Mountain Home lies on the Snake River Plain. In this region, the Snake River Plain trends northwest-southeast. Mountains rise from the plain reaching 8,853 feet mean sea level (MSL) to the northeast, 5,904 feet MSL to the north-northwest, and 8,403 feet MSL to the west (NOAA 1989). The elevation of the Snake River to the southeast of MHAFB is approximately 2,600 feet MSL, giving over 6,000 feet of relief in the general area.

MHAFB and the city of Mountain Home lie on a relatively flat plain. The slope between the two is less than 0.2 percent. The deeply incised Snake River Canyon and tributary canyons provide the only significant local relief.

MHAFB occupies a square approximately 3 miles on a side (see Figure 1.2-3). Elevations range from 3,050 feet MSL in the northeast corner to 2,980 feet MSL in the west-central area, with a maximum relief of only 70 feet. The higher areas lie along the northern and eastern margins of the base. A low drainage divide lies along the southern margin. Drainage from these higher areas is toward the center

of the base and then west, toward Canyon Creek, a southward-flowing tributary of the Snake River (USAF 1989; USGS 1955). The average ground slope across the base is less than 0.1 percent. The steepest ground slopes border a low ridge in the east-central portion of the base.

The boundaries of the city of Mountain Home enclose approximately 3 square miles of area with a maximum relief of about 60 feet. With a maximum elevation of almost 3,300 feet MSL to the north, this area slopes gently to the south.

M3.7.5 Soils and Soil Erosion

Soils found in this portion of the Mountain Home Plateau are mostly silty alluvium developed from basalt or loess. Loess is composed of very fine-grained particles carried by the wind and deposited as a blanket over the landscape. Outcrops of basalt frequently rise through the loess blanket. The loess in the Snake River Plain ranges from 2- to 10-feet thick (Hunt 1974). In the Mountain Home area, the soils are strongly developed, consisting of silt loam over a more clay rich loam horizon (Hironaka et al. 1983). Loam is a rich, permeable soil composed of a friable mixture of sand, silt, and clay particles. Duripans, or silicic hardpan layers, are found approximately 24 inches deep within many soils in the area. The soils vary in thickness, depending on the location of bedrock and hardpans, and may exceed 60 inches in depth (CH2M Hill 1988).

Most soils in the area are composed of fine-grained particles with varying percentages of clay and silt. These finer grained particles help hold the soils together. The strength of the soils is dependent on the amount of silt and clay present and on the moisture content. Water tends to weaken the finer grained soils. Once water is absorbed, the particles tend to break up leaving the soils subject to channeling erosion during surface runoff from rainstorms. While the soils in the area vary locally, regional studies (BLM 1982, 1985; SCS 1984) indicate that the Mountain Home Plateau area generally has a moderate erosion potential.

M3.7.6 Seismicity

Seismic activity refers to movement in the Earth's crust along a fault plane and is often accompanied by strong ground shaking. This shaking is the movement caused by seismic waves generated during fault rupture. In this section, an overview of the regional seismicity and the possibility of a potentially damaging earthquake occurrence in the vicinity of the Mountain Home Plateau is discussed.

A geologic feature known as the Idaho-Wyoming Thrust Belt extends from northcentral Utah through western Wyoming and into southeastern and central Idaho. This structural feature is a part of the complex Overthrust Belt system of the North American Cordillera. Potentially damaging earthquakes have historically occurred along this seismic belt system, including the Borah Peak Earthquake in

October of 1983. The earthquake's epicenter was located approximately 120 miles from Mountain Home near Mackay in the mountains of eastcentral Idaho and measured 7.3 on the Richter scale (Maley 1987).

Historically, there is little evidence of fault movement on the Mountain Home Plateau. Figure M3.7-1 shows the seismicity of the region as well as recorded earthquakes in and around southwestern Idaho. The more recently measured seismic events have occurred 30 miles or more to the north of the plateau. Lack of seismicity in the Snake River Plain may be attributable to a localized thermal anomaly in the area that may prevent the brittle response necessary for faulting (personal communication, V. Gellerman 1989).

M3.7.7 Cave Resources

Caves represent locations of both scientific and recreational interest. Numerous cave locations occur throughout the state of Idaho, including four that have been commercialized. Most of the caves occur as remnant lava tubes, lava blisters, or fissure caves in the basalts of the Snake River Plain. Additionally, there are solution caves formed in limestone and river-cut caves or shelter caves throughout the many deeply incised river canyons. Although no caves are present on MHAFB or in the city of Mountain Home, several basalt caves are known to exist in the vicinity. Additionally, Craters of the Moon to the northeast of MHAFB and the river canyons to the south contain a high concentration of caves.

Caves can contain unique geological, paleontological, biological, or archaeological resources. They also offer recreational opportunities for both casual and avocational users. However, caves and the resources they contain can be easily degraded, even through inadvertent actions. Moreover, caves often attract vandals that disturb the fragile resources they contain.

Overall, information on the scientific importance of caves within the region remains limited. Relatively few caves have been assessed scientifically, although presently available data suggest that many may contain important resources. For example, more than 300 caves within the region contain documented archaeological resources.

M3.7.8 Paleontological Resources

Fossils of all kingdoms of life are known to exist. These kingdoms include Monera (blue-green algae), Protista (single-cell organisms), Fungi, Plantae (plants), and Animalia (animals). Paleontological resources are the fossil evidence of past life found in the geologic record. They are used to study the evolution, distribution, and variation of species; to date geologic formations; and to reconstruct paleoenvironments at the time of deposition. A paleontological locality, as defined in this EIS, consists

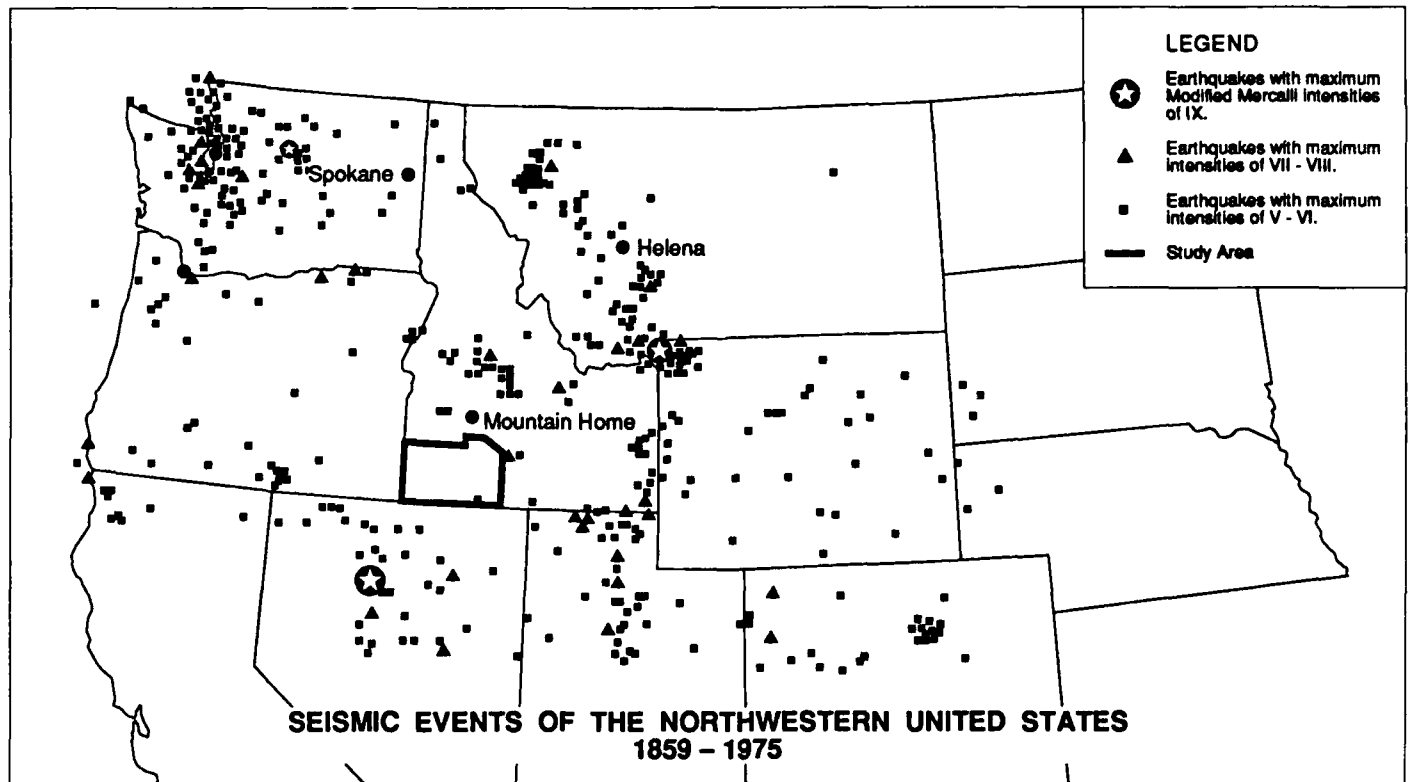
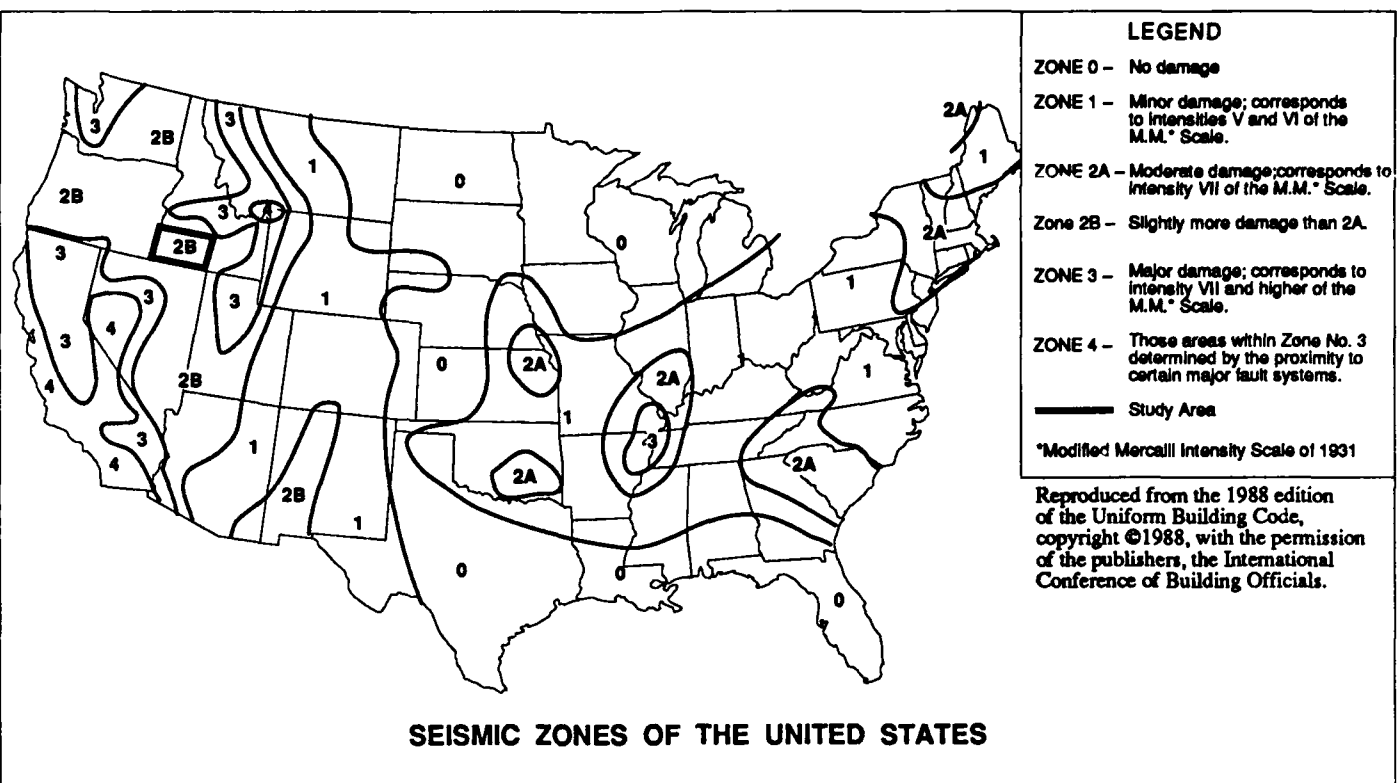


Figure M3.7-1

SEISMICITY OF THE NORTHWESTERN UNITED STATES

of an area known to have a high concentration or producing fossil sites. Individual sites exceed 200 at some of the localities in the area.

No fossil-bearing deposits or geological formations known to contain fossil deposits have been found on MHAFFB. MHAFFB is situated on a basaltic lava formation, while fossil deposits are found in sedimentary formations in the region. However, a number of fossilized remains are located between 15 and 40 miles south of MHAFFB (see Figure M3.7-2), primarily along the Snake River and its tributaries. This general region is a rich fossil-producing area that contains fossil Protista, rare fossil fungi, and a unique assemblage of fossil plants and animals. These include Miocene and Pliocene invertebrates and vertebrates and the only Pliocene dicot leaves in Idaho. Scientific research in this area is currently underway by the Idaho Museum of Natural History and the University of Michigan (personal communication, T. Weasma 1989). The most famous and significant of these fossil localities is the Hagerman Fossil Beds National Monument on the Snake River west of Hagerman. The monument contains over 200 fossil sites that include diatoms, ostracods, fish, amphibians, reptiles, birds, and mammals of Pliocene age (3.5 million years old). The vertebrate fossils are exceptionally well-preserved with complete horse skeletons, fossil birds, and turtles (BLM 1979b; BLM 1985). Another locality at the Sand Point Paleontological, Geologic, and Cultural Resource Area south of Hammett contains mollusc, mammal, and a highly diverse assemblage of fish fossils (BLM 1985). Horse Hill, west of the SCR, is considered by the National Park Service (NPS) to be a potential National Natural Landmark because of its significant paleontological remains (personal communication, G. Atkins 1989). At least 20 locations in the general area, including those of Oreana, Glens Ferry, and Grand View, have yielded sizable and important deposits of horse, camelid, rhinoceros, fish, and other vertebrate fossils as well as plant and invertebrate animal fossils. Caves with late Pleistocene deposits are found 5 miles west of MHAFFB.

A sensitivity map (see Figure M3.7-2) showing areas in southwestern Idaho, including MHAFFB, that could contain fossilized remains was constructed based on the locations of known deposits. Research (Bonnichsen and Breckenridge 1982) indicates that deposits known to or possessing the potential to contain fossils extends along either side of the Snake River throughout its extent within the ROI. This area includes the Bruneau, Chalk Hills, Poison Creek, and Glens Ferry Formations. At least 10 fossil deposits were found in the Glens Ferry Formation, Pliocene lake and stream deposits located primarily in a band parallel to the Snake River. At least four fossil localities were found in the Chalk Hills Formation, consisting of Miocene lake and stream deposits of sand silt clay, and diatomite. Six locations were found in the interbedded sediments within the Banbury Basalt. These interbedded sediments are composed of tuffaceous sand and gravel, ash, pebbles, diatomite, and thin discontinuous basaltic lavas (Ekren et al. 1981). Although the general extent of the potentially fossil-bearing formations encompass MHAFFB and the city of Mountain Home, recent alluvium and basalt rock overlay the deposits in these locations (see Figure M3.7-2).

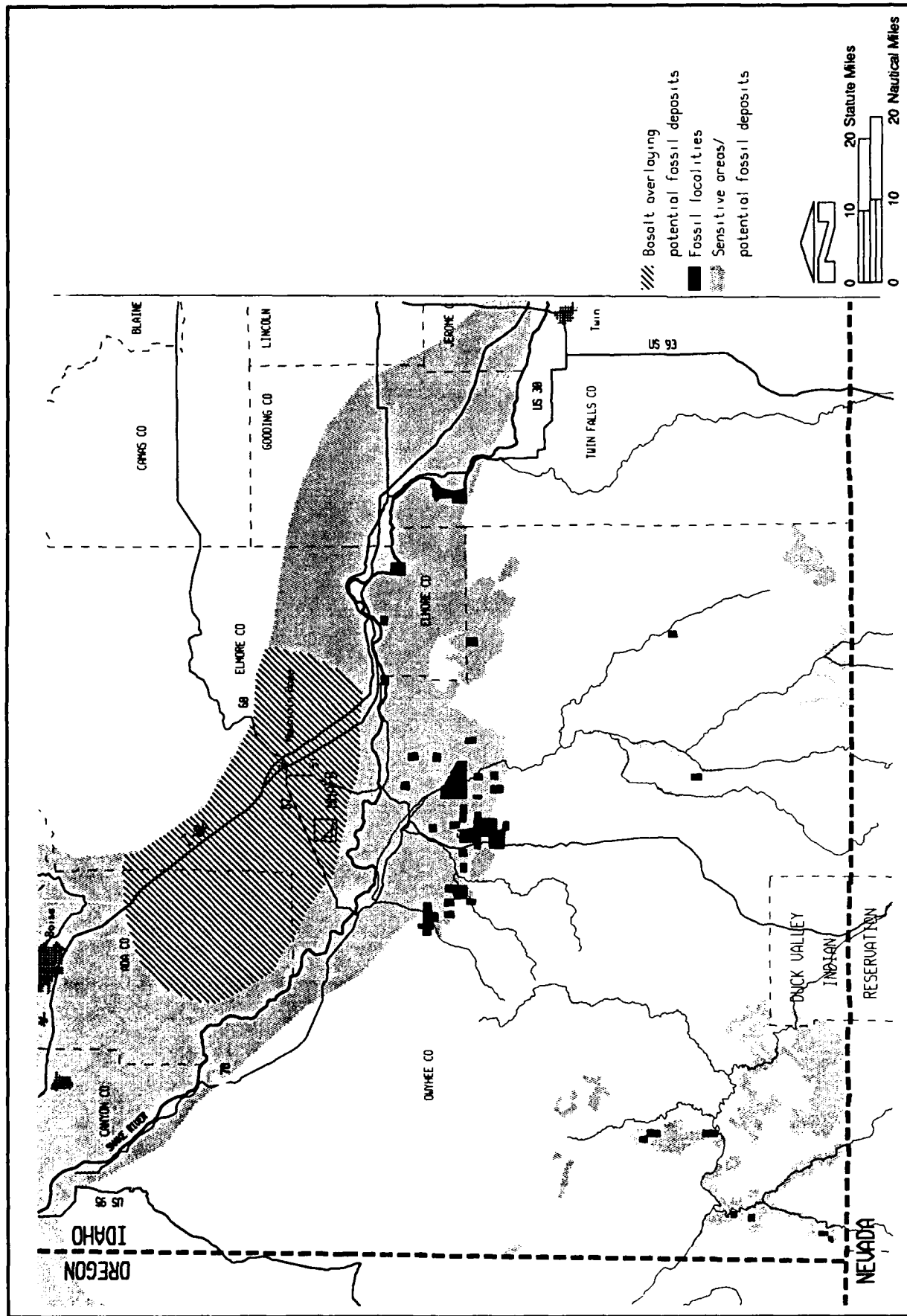


Figure M3.7-2

FOSSIL LOCALITIES AND PALEONTOLOGICAL SENSITIVITY

M3.8 LAND USE

M3.8.1 Definition of Resource

The attributes of land use addressed in this section include urban land, air base area planning and zoning, and recreation. The urban land section discusses land use planning and zoning in the city of Mountain Home and its vicinity. In the section concerning MHAFB, land use planning and zoning in the vicinity of MHAFB is discussed. The recreation section addresses natural resources and man-made facilities that are designated or available for public recreation use.

M3.8.2 Region of Influence

The ROI for land use includes MHAFB, its vicinity, and the city of Mountain Home; for recreation, it encompasses the area within 2 hours driving time from MHAFB (see section M3.8.6). The agencies with jurisdiction over land use in the ROI include the Air Force, BLM, USFS, the state of Idaho, Elmore County and other nearby counties, and the incorporated areas (cities).

M3.8.3 Regional Setting

MHAFB is located in southwestern Idaho approximately 400 miles south of the Canadian border, 71 miles north of the Idaho-Nevada state line, and 58 miles east of the Idaho-Oregon state line (see Figure 1.2-1). The base is situated on the Snake River Plain in the southwestern portion of Elmore County. The Snake River lies approximately 4 miles south of the base, where it forms a portion of the boundary between Elmore County and Owyhee County. Ada County is approximately 7 miles to the northwest; Gooding, Twin Falls, and Camas counties are 40 or more miles to the east (see Figure 1.2-2.)

The cities of Mountain Home (approximately 10 miles northeast of the base) and Glenns Ferry (approximately 30 miles east-southeast) are the only incorporated communities in Elmore County. Unincorporated communities in the vicinity of MHAFB include the town of Hammett in Elmore County and the towns of Grand View and Bruneau in Owyhee County (see Figure 1.2-2.)

The primary landowner in Elmore County is the federal government, which controls 1,389,781 acres (approximately 70 percent of the county). Federal land includes 777,034 acres of USFS land (39 percent) and 604,940 acres of BLM land (31 percent). The DOD owns another 7,807 acres at MHAFB and the Small Arms Range, which together constitute only 0.4 percent of the total county area. Private land in the county totals 455,304 acres (23 percent) and total state land is only 126,435 acres (6 percent).

In the immediate vicinity of MHAFB and the city of Mountain Home, a more equal mix of federal, state, and private land prevails, as shown in Figure M3.8-1. Most of the land within the city limits and along the railroad and Interstate 84 corridors is private. Numerous parcels of private land are also located near or adjacent to MHAFB. Between the base and the city, the state owns over 30 square miles of contiguous land. The remainder of the land in the vicinity is federal land held by the BLM and DOD.

M3.8.4 Urban Land

The Comprehensive Plan (1981) for the city of Mountain Home provides for a well-defined central business district, light industrial uses along the railroad, an industrial park near Interstate 84, public zones, and residential areas. The Mountain Home Land Use Plan map is depicted in Figure M3.8-2.

The Land Use Plan covers the area within the city limits plus areas of anticipated growth and expansion adjacent to the city. The land within the city limits is the Primary Urban Service Area, and the adjacent expansion areas comprise the Secondary Urban Service Area.

Within the Primary Urban Service Area, the city must provide water, sewer, waste disposal, streets, fire and police protection, and recreation opportunities. In the undeveloped portions of the city, all of these services except water, sewer, and street construction can be provided with a minimum of additional expense. New water, sewer, and streets are fully under control of the city, with construction costs borne mainly by developers.

Within the Secondary Urban Service Area, Elmore County has legal jurisdiction. The city and the County cooperate in defining the expansion areas and regulating development. The Elmore County Comprehensive Plan (1980) provides for an eventual tripling of population for the city of Mountain Home. Most of the land adjacent to the city (out to a distance of at least 0.25 mile and up to 2.5 miles) is planned for residential, commercial, or industrial growth. The only exception is the area north of Interstate 84, which is planned for agriculture or residential use. Areas planned for residential growth total approximately 4,250 acres, which is nearly twice the current city area of approximately 2,240 acres.

A recent water study for the city (Forsgren Associates 1988) identified specific areas of anticipated residential and commercial growth. Residential growth is expected to the north between Interstate 84 and Old Highway 30 and to the south on both sides of Old Highway 30 (see Figure M3.8-2). Commercial growth is expected to the northeast of Interstate 84 along Highway 20 and to the southwest along Airbase Road (Highway 51/67).

Zoning for the city of Mountain Home corresponds generally to the Land Use Plan. Residential zoning is defined according to density levels to provide for diverse housing needs. Four basic density

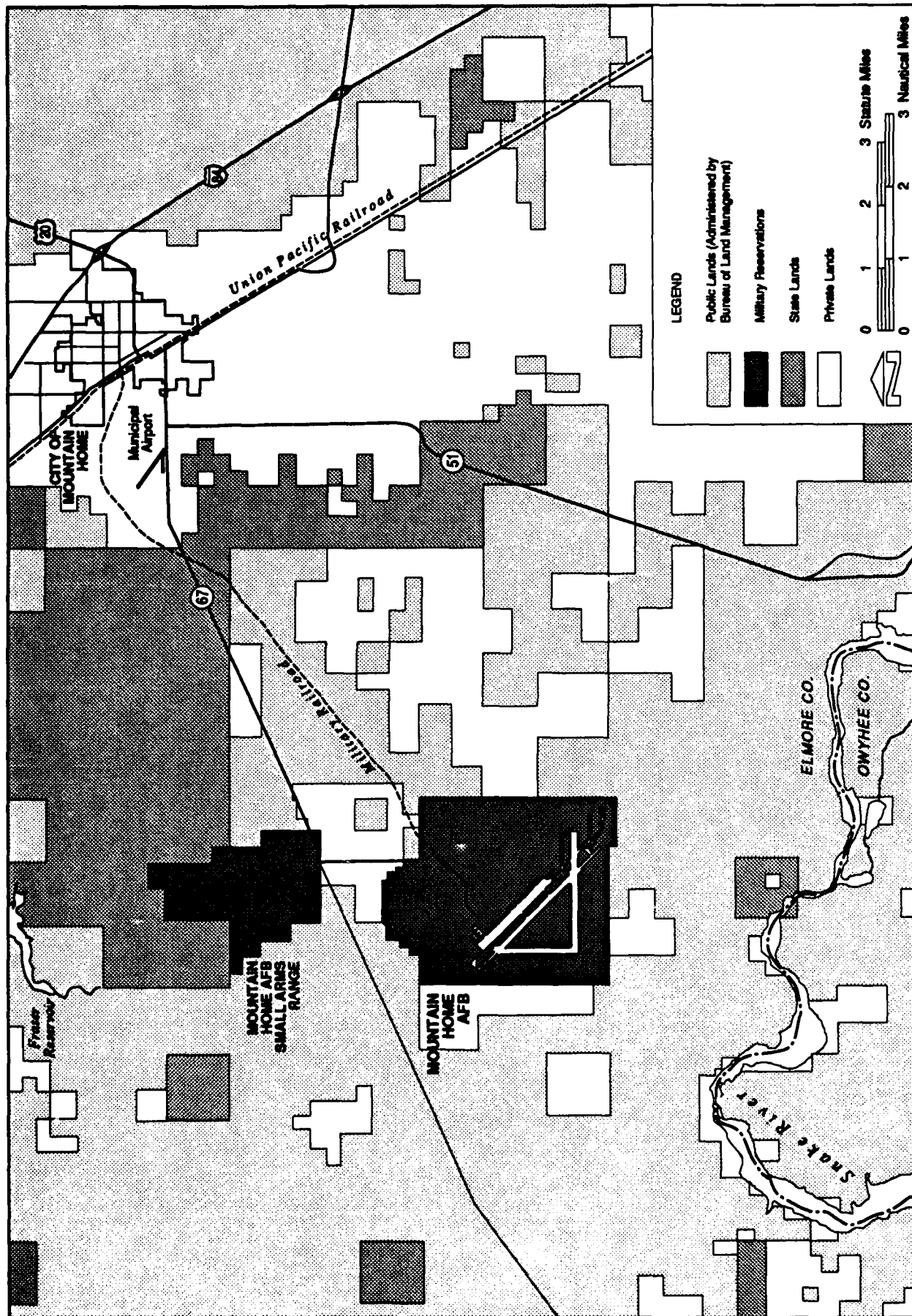


Figure M3.8-1

LAND OWNERSHIP IN THE VICINITY OF MHA FB AND CITY OF MOUNTAIN HOME

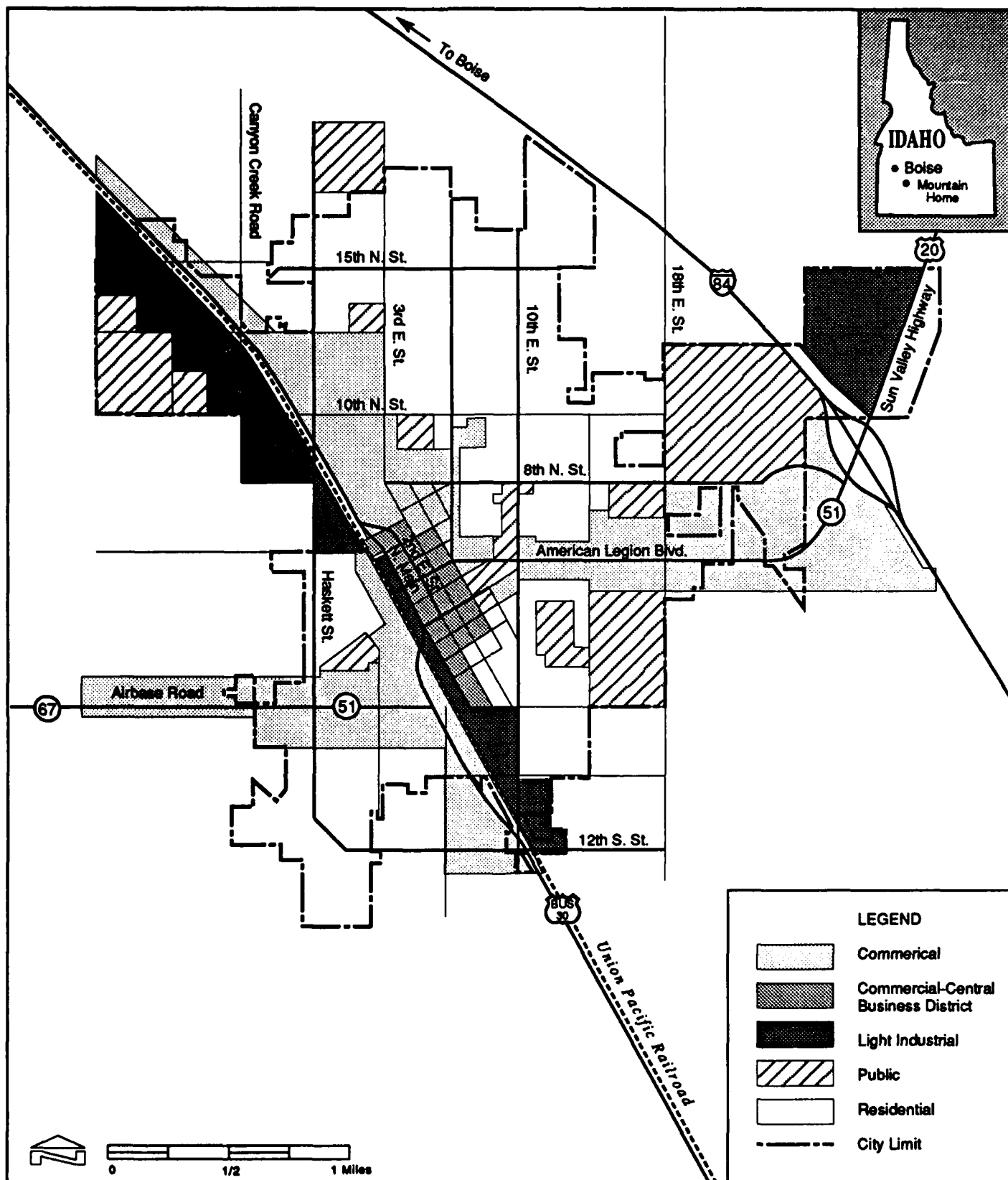


Figure M3.8-2
CITY OF MOUNTAIN HOME LAND USE PLAN

levels of dwelling units per acre are specified: low density -- single family (3 or less per acre); medium density -- single family (4 to 6 per acre); medium density -- multi-family (6 to 8 per acre); and high density -- multi-family (6 to 16 per acre).

M3.8.5 Air Base Area Planning and Zoning

The development and use of land near Air Force bases are matters of continuing concern for both the military and the public. Land near air bases is often highly attractive as an area for private development. If such development is incompatible with the current or future mission of the air base, the public may be exposed to the noise and other potential hazards of air base operations.

Although still located some distance from its boundaries, MHAFB is experiencing the effects of land development. Experience at other air bases has shown that when unplanned off-base development encroaches on a facility's accident potential area and/or high noise zones, the affected groups soon seek relief. This relief can range from the imposition of "quiet hours" to the closure of a base.

M3.8.5.1 Air Installation Compatible Use Zone

An Air Installation Compatible Use Zone (AICUZ) report is developed by the Air Force for each base to provide land use guidance for local communities and individuals relative to noise and accident hazards associated with flying activities and also to prevent degradation of mission capability due to encroachment by incompatible land uses. The current AICUZ report for MHAFB is dated July 1982.

The AICUZ program uses current technology to assess noise levels and a statistical analysis to determine aircraft accident potential zones. Regulations developed by the Air Force and the FAA governing the height of obstructions are also considered. This information is presented as Clear Zones (CZs), Accident Potential Zones (APZs), Noise Zones (NZs), and height and obstructions criteria.

CZs and APZs are defined from a statistical analysis of survey data on major Air Force aircraft accidents that occurred within 10 miles of airfields between 1963 and 1972. At each end of the MHAFB runway, a CZ and two APZs have been designated (see Figure M3.8-3). Within the CZs, the overall accident risk prohibits economic use of the land. The Air Force has acquired the necessary real property interests within the CZs to prevent incompatible land uses. APZ I possesses a significant accident risk factor but it is lower than that defined for the CZ. This 3,000-foot by 5,000-foot area has recommended land use compatibility guidelines that are sufficiently flexible to allow reasonable economic use of the land. APZ II, which is 3,000 feet wide and 7,000 feet long and extends 15,000 feet from the runway, also has some accident risk associated with it, though less than APZ I. Additionally,

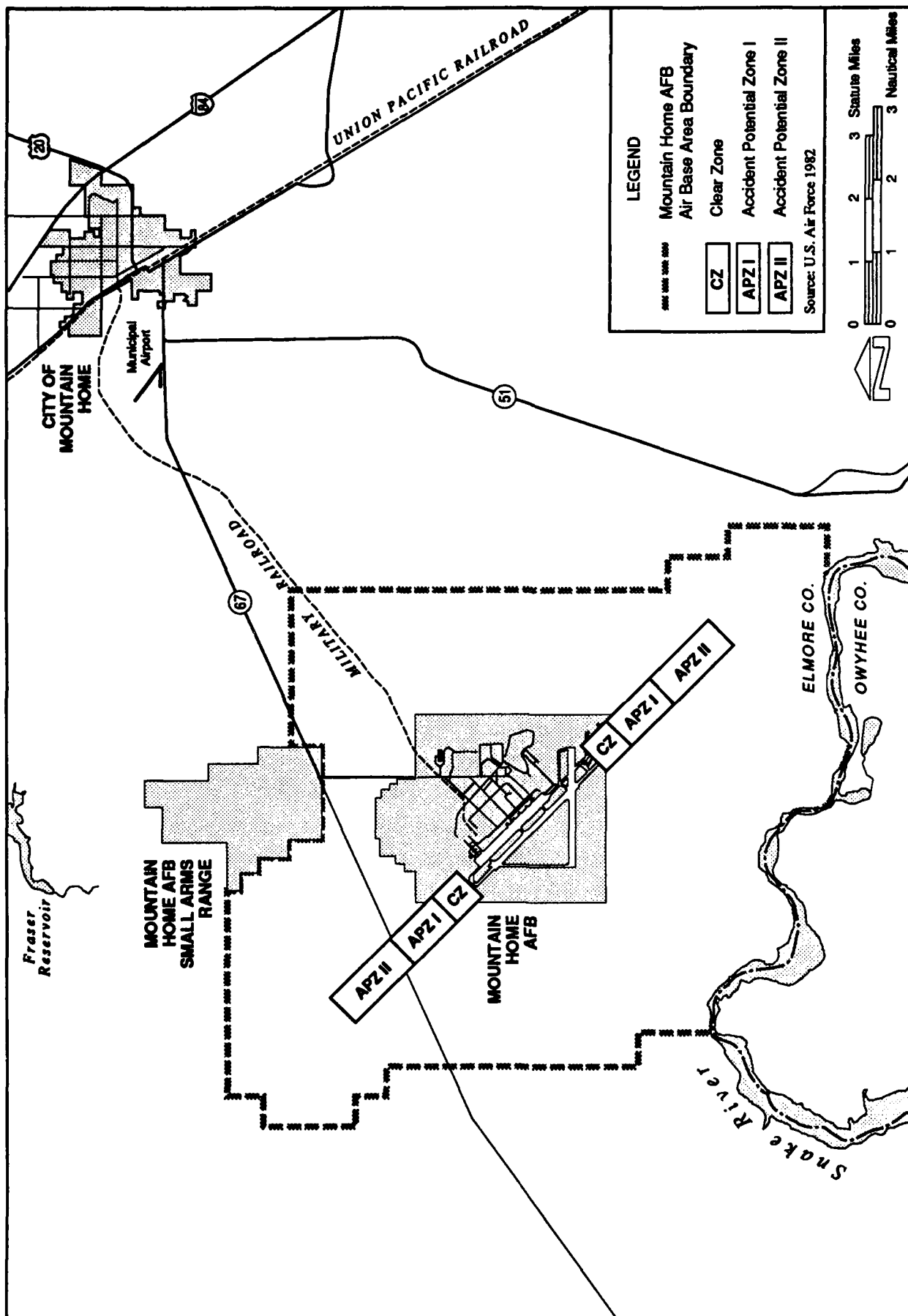


Figure M3.8-3

MHAFB ACCIDENT POTENTIAL ZONES

about 25 percent of accidents occur outside the CZs and APZs. While the Air Force does not specifically address accident potential outside these areas, it should be recognized that a potential exists (USAF 1982).

NZs are expressed in L_{dn} , with NZ contour lines developed by a computer program. L_{dn} is defined in section M3.3 and the existing NZ contour lines are shown in Figure M3.3-2. Most of the existing base housing area and all off-base developed areas lie outside of the 65 L_{dn} contour (see Table M4.3-1) and beyond the limits of potentially detrimental effects of noise.

Existing land use in the MHAFB vicinity is consistent with the recommendations contained in the AICUZ report. Development is occurring on private land along Airbase Road (which ends at the main gate of MHAFB) in the form of residential and commercial uses. The AICUZ report recommends continued review of development activity in this area to ensure the mutual protection of MHAFB and the local residents.

M3.8.5.2 County Zoning and Comprehensive Plan

The Elmore County Board of Commissioners adopted an Airport Hazards Zoning Ordinance (1974) that addresses zoning for all airports within Elmore County, including MHAFB. Generally, one dwelling unit per 320 acres is the maximum development allowed in the vicinity of an airport. Commercial development along Airbase Road (the Airport Commercial Zone) are an exception to this limitation. The Airport Hazards Zoning Ordinance is consistent with the recommendations contained in the AICUZ Report.

The projected land-use map in the Elmore County Comprehensive Plan outlines an area which corresponds closely with the AICUZ noise contours and designates it as "Air Base Area" (see Figure M3.8-3). The text of the Comprehensive Plan indicates that this designation serves as:

"... a protective area around the Mountain Home Air Force Base for the safety and health of individuals, and to ensure that encroachment or developments will not become detrimental to the mission or operation of the base. No subdivisions are allowed. Owners may build a residence on a lot of record on part of the area. Approach and landing zones are restricted to non-residential agricultural buildings. There is also a commercial area."

The Elmore County Comprehensive Plan also designates all land surrounding the AICUZ as Agriculture "A", which is defined as spring and winter grazing lands and irrigated cropland. Development is not allowed on this land without a public hearing. Examination of aerial photos (October 1987) of MHAFB and its vicinity reveals mostly rangeland around the base with plowed fields

on the private land adjacent to its western, southern, and eastern boundaries (see Figure M3.8-1). The AICUZ report states that future development consistent with the principles established in the Elmore County Comprehensive Plan would preserve the integrity of the airfield.

M3.8.6 Recreation

The recreation resources ROI is defined as the area within approximately two hours driving time from MHAFB, as shown in Figure M3.8-4. Outdoor recreation demand generated by realignment probably will be concentrated within this ROI. This assumption is supported by the analysis of Reed and Villasenor (1982), who demonstrated that recreation facilities at distances requiring more than 2 hours travel (driving time) from the place of residence are not heavily used except for very popular developed recreational sites or areas of unique attraction (e.g., City of Rocks National Landmark, Craters of the Moon National Monument, Sawtooth National Recreation Area, or major ski resorts).

Recreation resources are made available by federal, state, county, and city governments, and by private operators. Examples are national or state parks, recreation areas, forests, monuments, wildlife management areas, off-road vehicle (ORV) areas, and historical sites. At the local level, recreation resources may include county or municipal parks and swimming pools, baseball and soccer fields, and reservoirs. Privately operated recreation facilities include theme parks, ski resorts, recreational vehicle (RV) parks.

M3.8.6.1 Air Force Recreation Activities

Provision of recreational opportunities and facilities is an integral part of planning and development at all Air Force bases. At MHAFB, recreation facilities available to military personnel and their families include a swimming pool, tennis courts, football stadium and track, 18-hole golf course, softball and soccer fields, gym, trap and skeet range, archery range, and an RV park. Off base, a wide range of outdoor recreational activities are available. Hunting, fishing, boating, water and snow skiing, backpacking, hiking, camping, spelunking, climbing, horseback riding, mountain biking, ORV riding, and snowmobiling are accessible within a few hours drive of MHAFB. The Mountain Home Airbase Outing Adventure Program sponsors day outings and weekend excursions throughout Idaho.

M3.8.6.2 City of Mountain Home Recreation Resources

The city of Mountain Home Parks and Recreation Commission has analyzed the city's park needs and has adopted a standard of 12 acres of parkland per 1,000 persons served. The city has defined the population served by the city's recreation resources to include the city resident's plus approximately half of the remaining Elmore County residents for a total of about 16,200. The city currently has a total of 171 acres of parks, including school playing fields and the golf course (Figure M3.8-5). The city's

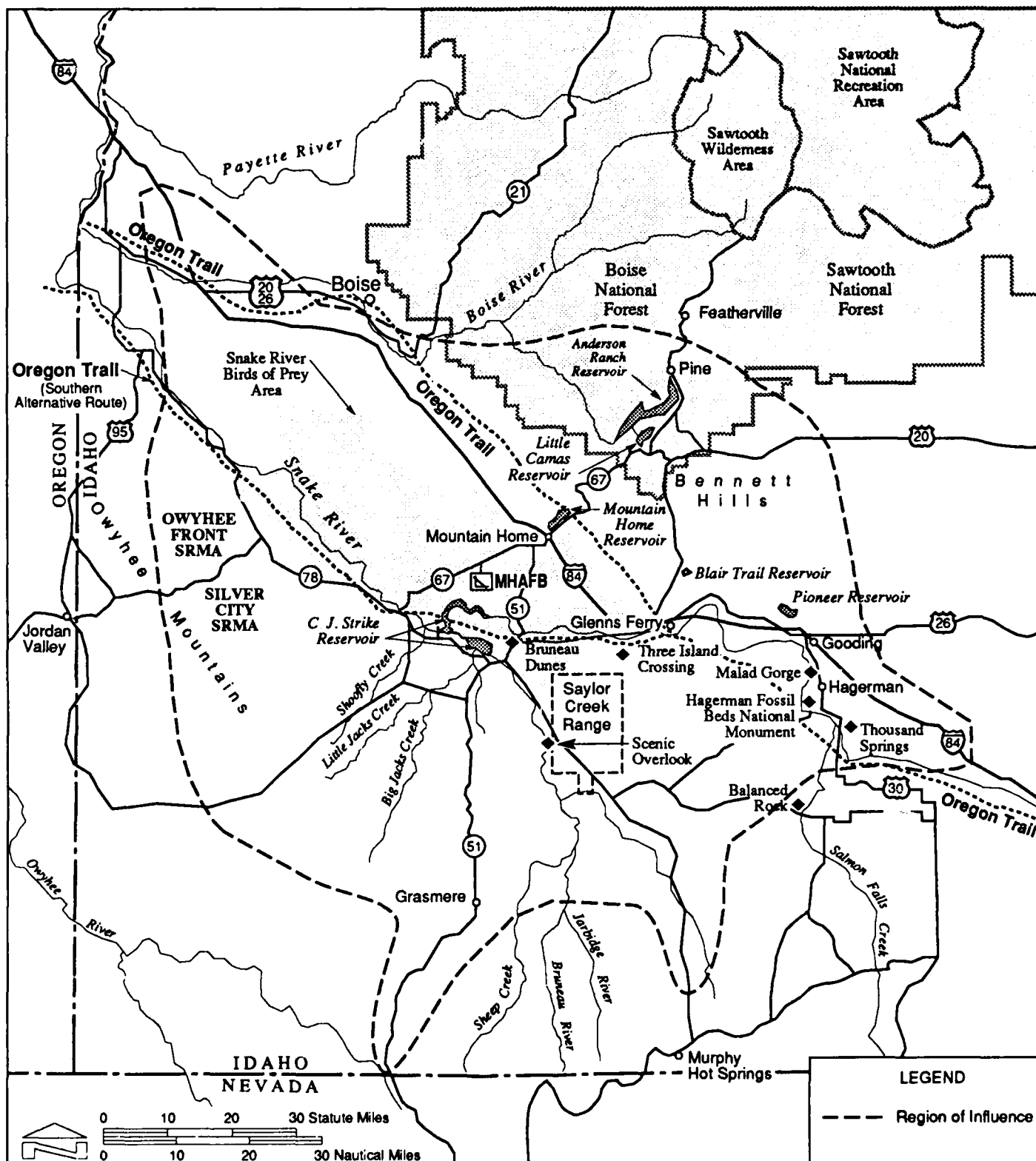
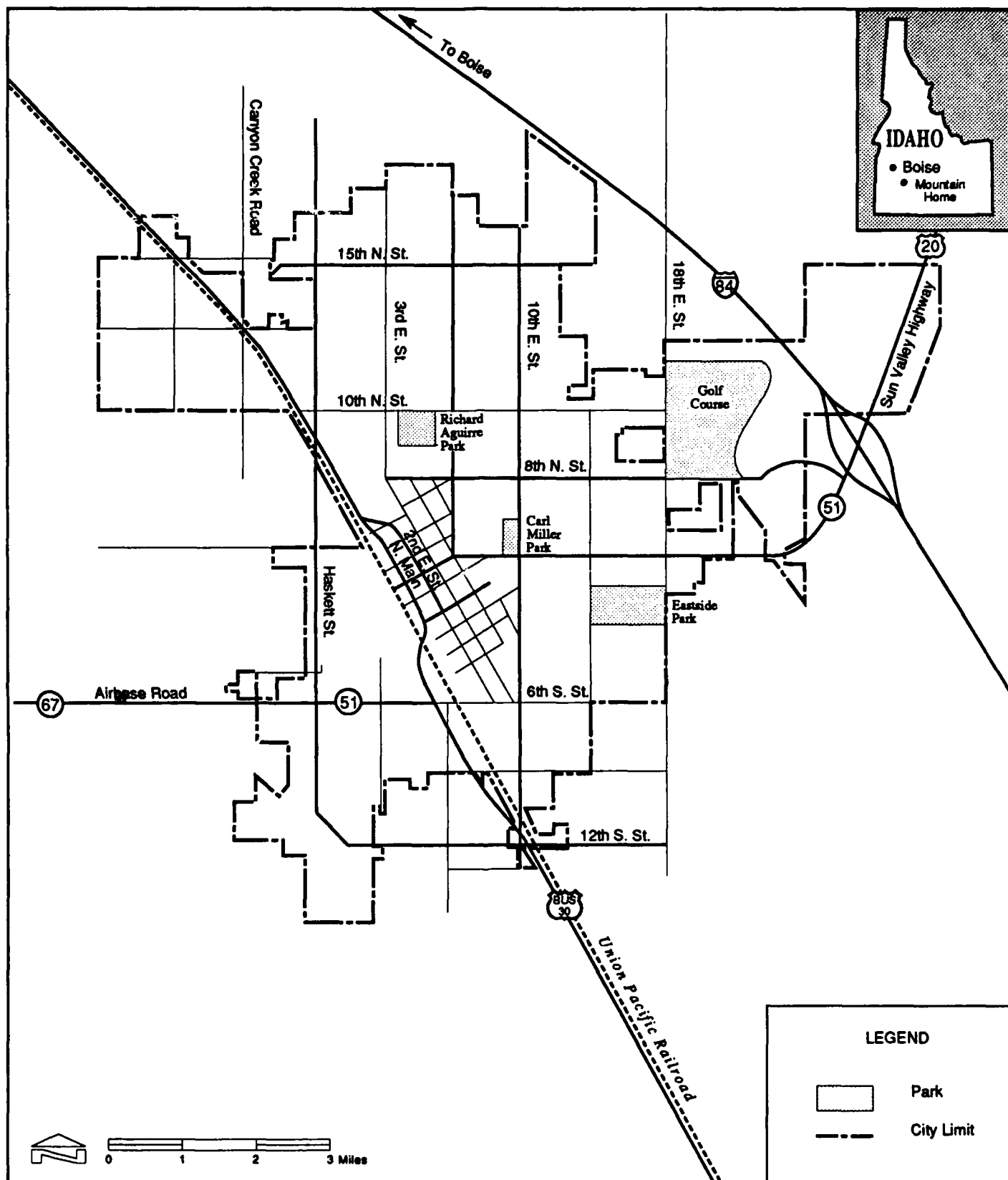


Figure M3.8-4
REGION OF INFLUENCE FOR RECREATIONAL RESOURCES



adopted standard and its definition of population served indicates a current need for additional parkland.

M3.8.6.3 Regional Recreation Resources

The C. J. Strike Reservoir, located on the Snake River along the Elmore-Owyhee county line, provides an outstanding sport fishery for both warm and cold water species. Boating activities, such as sailing, windsurfing, and water skiing, are increasing since reservoir water levels fluctuate very little and launching facilities remain usable throughout the year. A number of developed camping facilities have been established at the reservoir, including a 3-acre park operated by the Mountain Home Airbase Outing Adventure Program for military personnel and their families. Hiking along remnants of the Oregon Trail and waterfowl hunting are also popular. The majority of visitors to the reservoir come from nearby Ada, Canyon, and Elmore counties. The highest use period occurs from March through June. The *Idaho Recreation 2000 Implementation Plan* (BLM 1989a) estimates current recreation use to be about 60,000 visits annually.

Three state parks are located in the ROI along the Snake River: Bruneau Dunes, Three Island Crossing, and Malad Gorge. Camping and picnicking facilities are available at both Bruneau Dunes in Owyhee County and Three Island Crossing in Elmore County. Malad Gorge in Gooding County is a day-use park only. In 1988, the visitor count for the Bruneau Dunes was 7,804 campers and 59,245 day users; Three Island Crossing had a total of 13,684 campers and 26,663 day-users; and Malad Gorge State Park had 30,688 day-users (Idaho State Parks 1988). A majority of the visitors use the camping facilities at Bruneau Dunes and Three Island Crossing as a stop-over rather than a destination because of easy highway access and developed camping spots (i.e., pit toilets, water, RV-hookups).

The Snake River Birds of Prey Area (BOPA) consists of 482,000 acres set aside to preserve raptors and raptor habitat. Because it contains the highest known concentration of nesting raptors in North America, the BOPA offers opportunities to view and photograph birds of prey in their natural environment. Various other recreation activities also occur in the BOPA. Also located in the BOPA is the Black Butte/Guffey Butte Archaeological District, an aggregation of more than 100 historic and prehistoric sites listed on the National Register of Historic Places (see section M3.5, Cultural Resources). The prehistoric rock art and historic ruins make popular destinations for hikers and boaters.

The South Fork of the Boise River is a popular fishing and recreation area that also receives heavy white-water boating use. Anderson Ranch Reservoir on the South Fork is popular as a hunting, fishing, camping, and boating area for residents of both Boise and Mountain Home. Forest Service campgrounds along the South Fork are heavily used (Elmore County 1980). The greatest concentration of use occurs between Pine and Featherville, where four private RV parks are located.

The Payette River area, north of Boise, is one of the fastest growing in Idaho in terms of recreational demand (BLM 1989a). The river provides whitewater kayaking and rafting, as well as power boating, fishing, camping, picnicking, and sightseeing. The segment of the North Fork from Smiths Ferry to Banks is an internationally renowned white-water river. Recreational facilities in the area include five federal campgrounds and one state campground, as well as several overused boat access points. To disperse use and relieve demands on access points, river management planning is expected to create additional facilities and access points. Another possible measure to reduce overuse involves the lease or exchange of private land areas where the more popular access points are located.

The Idaho Department of Parks and Recreation recognizes the Owyhee Front, located in the northern foothills of the Owyhee Mountain Range (see Figure M3.8-4), as a prime area for ORV recreation. Competitive motorcycle activities occur throughout the year. Total annual estimated recreation use in the Owyhee Front is 56,000 visits (BLM 1989a).

Also located in the Owyhee Mountains is the Silver City Historic District. Silver City is an excellent example of a preserved mining town. Facilities in the area include a campground within the Silver City townsite and a number of small undeveloped campsites along Jordan Creek. Fishing and hunting are popular along Jordan Creek and in the adjacent hills. Renewed gold and silver mining in the surrounding mountains is planned, and some is underway. These mining operations are expected to severely degrade the scenic quality of the area (BLM 1989a).

The Bennett Hills, located east of the city of Mountain Home between the Snake River and the Sawtooth National Forest, is a popular snowmobiling area. A snowmobile club grooms and manages a 37-mile snowmobile trail in the winter. In the spring, the area is moderately used by ORV riders. The Bennett Hills area is also a part of a large trophy hunt unit for mule deer and elk, with hunters setting up base camps near the wilderness study areas (WSAs) in the area. Other recreational opportunities include fishing, spelunking, upland game and waterfowl hunting, primitive car camping, mountain biking, hiking, backpacking, and horseback riding. Estimated recreation use is 25,000 visits per year (BLM 1989a).

Two segments (101 miles) of the primary route of the historic Oregon Trail, which was used by thousands of westbound emigrants, are within the ROI. These segments have been designated for National Historic Trail status (see section M3.5, Cultural Resources) and the entire route (2,170 miles) has been nominated to the National Register of Historic Places. An Oregon Trail interpretive site, located at Bonneville Point south of Boise, is visited by approximately 5,000 people each year. Associated historic route remnants have been marked and an estimated 1,500 people will visit these marked trail remnants in 1989 (BLM 1989a).

The Hagerman Fossil Beds National Monument, located in Hagerman Valley, contains one of the four major fossil deposits in North America. The site has been designated as a National Monument because of the wealth of paleontological resources found there. Destructive ORV use, livestock grazing, and private collecting have adversely affected the fossil beds. In the last few years, however, management practices such as prohibition of ORV use have prevented further serious damage. Visitors and day users usually picnic and camp in more scenic areas of the valley such as 1,000 Springs, the outlet of the Lost Rivers. Several parks and access points along the Snake River in Hagerman Valley are used for picnicking, camping, and boating.

Many areas with outstanding wilderness values are found within the ROI. WSAs in the ROI include Bruneau River, Little Jacks Creek, Big Jacks Creek, Duncan Creek, King Hill Creek, Deer Creek, and Gooding City of Rocks. Attractions of WSAs include outstanding scenery, remoteness, and wildlife values. In addition to inclusion in a WSA, approximately 120 miles of the Bruneau River have been recommended to Congress for wild and scenic designation.

The nearest snow skiing facilities are at Soldier Mountain in Camas County, Bogus Basin north of Boise, and Sun Valley approximately 75 miles northeast of Mountain Home. Sun Valley's Bald Mountain is the most developed of the three, with 60 ski runs, 12 chair lifts, and an uphill capacity of 22,000 skiers per hour. The highest use of the mountain (424,000 skiers) was recorded in the 1981-82 season.

The Sawtooth National Recreational Area (SNRA) has been set aside to preserve recreational opportunities for the public. Throughout the area a wide variety of recreational opportunities are available, ranging from very primitive to highly developed sites. Of the 756,000 acres in the SNRA, 217,000 acres are within the Sawtooth Wilderness. Five major rivers flow through the SNRA, including the Salmon and Big Wood. Recreational activities in the SNRA include hiking, boating, waterskiing, swimming, rafting, backpacking, and horseback riding.

Craters of the Moon National Monument is a 53,545-acre area containing geologically recent cinder cones, lava flows, and other volcanic features. Recreational activities include hiking, camping, and sightseeing. Average annual use is estimated at 230,335 visits per year.

City of Rocks National Landmark was declared a National Reserve by Congress in November 1988. Although under the jurisdiction of the National Park Service, the reserve will be managed by the Idaho Department of Parks and Recreation. Currently, about 50,000 people per year visit City of Rocks; over half the visits are from rock climbers. Because of improved access roads and recent publicity in national magazines, visits are expected to increase by 10 percent next year.

Hunting and fishing are popular activities in the ROI and throughout Idaho. Both big game and a variety of upland game are hunted. Fishing is a popular activity on the Snake River and its tributaries and on numerous reservoirs, including Mountain View Reservoir on the Duck Valley Reservation. Hunting and fishing in the ROI are regulated by the State of Idaho.

M3.9 TRANSPORTATION

M3.9.1 Definition of Resource

Transportation resources are defined as the infrastructure and equipment required for the movement of people, raw materials, and manufactured goods in geographic space. These resources may include highway and rail networks, airport and port facilities, and passenger and freight transport services. In the context of the planned action, the primary transportation concerns are focused on the roadway network in and around the city of Mountain Home, the level of service available on the network, and the potential increase in the number of accidents as a result of increased use of the network.

The levels-of-service for a length of roadway is a qualitative measure of the operational conditions, especially the delay, congestion, and conflicting movements experienced by a driver. Factors used to calculate levels-of-service include average daily traffic (ADT), vehicle mix, type of roadway, number of lanes, peaking values, and other physical characteristics. A level-of-service definition generally describes these conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, convenience, and safety.

Six levels of service, A through F, are used to represent a continuum of operating conditions, A being the best and F the worst. The levels-of-service are described in Table M3.9-1.

Level-of-service for signalized intersections is defined in terms of delay. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. Delay is a complex measure dependent on a number of variables such as cycle length, volume, green-time ratio, and number of lanes. The levels-of-service associated with intersections are defined in Table M3.9-2.

M3.9.2 Region of Influence

Project-related impacts upon transportation resources are assessed for MHAFB, the city of Mountain Home, and road systems likely to be used for base access. Since U.S. Interstate 84 will be used for all long-distance highway trips, the highway system ROI includes I-84 and roadways leading from it to the base.

Potential impacts on railroad and airport facilities in the area will also be evaluated, although these facilities are expected to be minimally affected by the realignment. There are no significant waterways or port facilities near the Mountain Home area. The major transportation resources in the Mountain Home area are shown in Figure M3.9-1.

Table M3.9-1

LEVEL OF SERVICE CRITERIA FOR TRANSPORTATION FACILITIES

LOS A	Traffic flows freely with low volumes and high speeds.
LOS B	Traffic flow is stable, although operating speeds and maneuverability are somewhat restricted due to increased traffic.
LOS C	Traffic flow is still stable, but most drivers are restricted in their freedom to select their own speed, change lanes, or pass.
LOS D	Traffic flow approaches instability; tolerable operating speeds are maintained but may drop due to fluctuations in volume and temporary restrictions to flow. Maneuverability is limited.
LOS E	Volumes are at or near the capacity of the roadway. Flow is unstable, speeds are low, and momentary stoppages may occur.
LOS F	Volumes exceed roadway capacity, speeds are very low, and stoppages may occur for long or short periods.

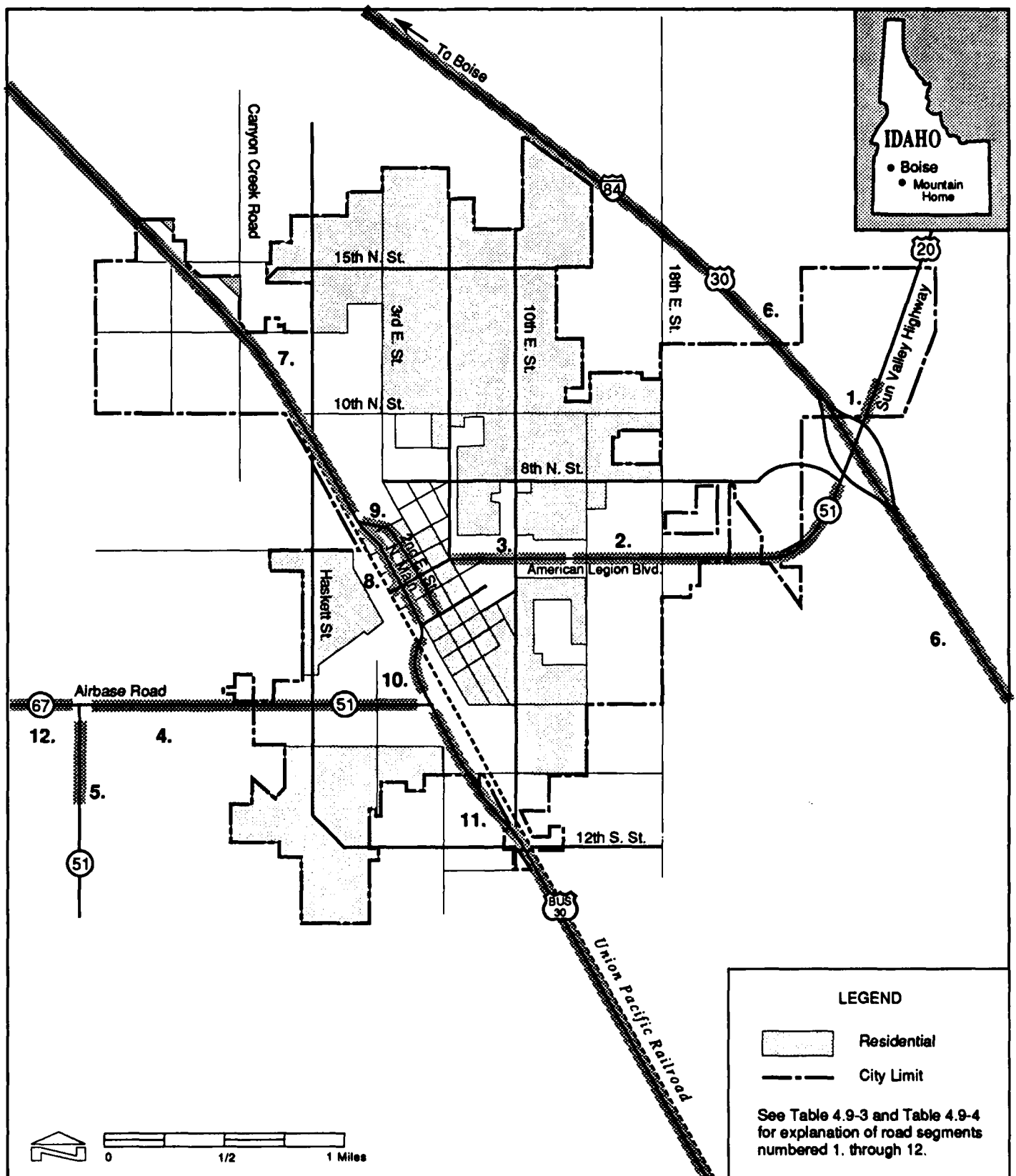
Source: Highway Capacity Manual 1988.

Table M3.9-2

LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

LOS A	Very low delay, i.e., less than 5 seconds per vehicle. Most vehicles do not stop as progression is extremely favorable
LOS B	Delays range from 5 to 15 seconds per vehicle. More vehicles stop than for LOS A.
LOS C	Delays range from 15 to 25 seconds per vehicle. The number of vehicles stopping is significant.
LOS D	Delays range from 25 to 40 seconds per vehicle. Congestion becomes noticeable with many vehicles stopping.
LOS E	Delays range from 40 to 60 seconds per vehicle, which is the limit of acceptable delay. Progression is poor.
LOS F	Delays are in excess of 60 seconds per vehicle. Arrival rates exceed the capacity of the intersection and conditions are considered unacceptable by most drivers.

Source: Highway Capacity Manual 1985.



A transportation resource does not exist as one discrete entity that is subject to project impacts. Rather, it is a series of interconnected pieces, each of which can be affected differently and independently. For example, a highway may be many miles long but only one mile of it may be affected by the project. Similarly, within a community, there may be hundreds of roads but not all would be affected and only a few might be substantially affected. Therefore, only selected portions of the total system are subject to analysis. These segments are those that would experience the major project-induced effects (i.e., large increases in traffic flow) or be important for reasons of location.

M3.9.3 Mountain Home Roadway Network

Table M3.9-3 defines the primary links or sections of road network in the ROI. Figure M3.9-2 highlights those primary components. The Mountain Home area is served by a roadway network that includes one major interstate, U.S. highways, state highways, and numerous collector and local streets. The overall condition of this network is good, having few existing problems with levels-of-service, high accident locations, or poor infrastructure quality.

M3.9.3.1 Interstate 84

Interstate 84 is the only interstate directly serving the city of Mountain Home. This four-lane divided road traverses Elmore county from northwest to southeast, passing through the northeast corner of the city of Mountain Home. Three exits serve access to Mountain Home: Exit 90, I-84 Business Loop, West Mountain Home; Exit 95, U.S. 20, Mountain Home, Fairfield; and Exit 99, Bennett Road, East Mountain Home. This highway represents the primary transport route connecting southern Idaho to the northwestern United States and to the east, with good connections also available to Salt Lake City and other destinations to the south. Materials and manufactured goods are supplied to the city of Mountain Home and MHAFFB primarily by means of I-84.

I-84 between Boise (approximately 50 miles to the northwest) and the city of Mountain Home is characterized by low traffic volumes. The ADT on I-84 west of Mountain Home is about 10,000 vehicles with a level-of-service A, which signifies a condition whereby traffic flows freely and users are unaffected by the presence of others in the traffic stream (see Table M3.9-1 for descriptions of level-of-service). East of Exit 90 and around Mountain Home, the ADT falls to under 7,000. Given these low volumes, the level-of-service for I-84 within the ROI is also A.

The interstate is maintained by the Idaho State Department of Transportation (IDOT) through a combination of federal and matching state funds. IDOT maintains the Idaho Interstate 4R Development Program, which essentially is a five-year plan that identifies contracted projects and projects under development (IDOT 1989a). Scheduled in this plan for fiscal 1991 are two

Table M3.9-3

PRIMARY COMPONENTS OF MOUNTAIN HOME ROADWAY NETWORK

<i>Link</i>	<i>Description</i>
1	US20 From I-84 Exit 95 extending one mile to the north.
2	SH51 East of 14th Street extending to I-84.
3	SH51 From 14th Street to intersection of I-84B.
4	SH51 From I-84B to intersection of SH51 and SH67.
5	SH51 From SH67 south toward Owyhee County.
6	I-84 From Exit 90 to Exit 99.
7	I-84B From I-84 Exit 90 to approximately 3.6 miles southeast.
8	I-84B Southeast one-way section
9	I-84B Northwest one-way section
10	I-84B From Jackson Street to SH67.
11	I-84B From SH67 east to I-84.
12	SH67 From SH51 to MHAFB.

Source: SAIC 1989.

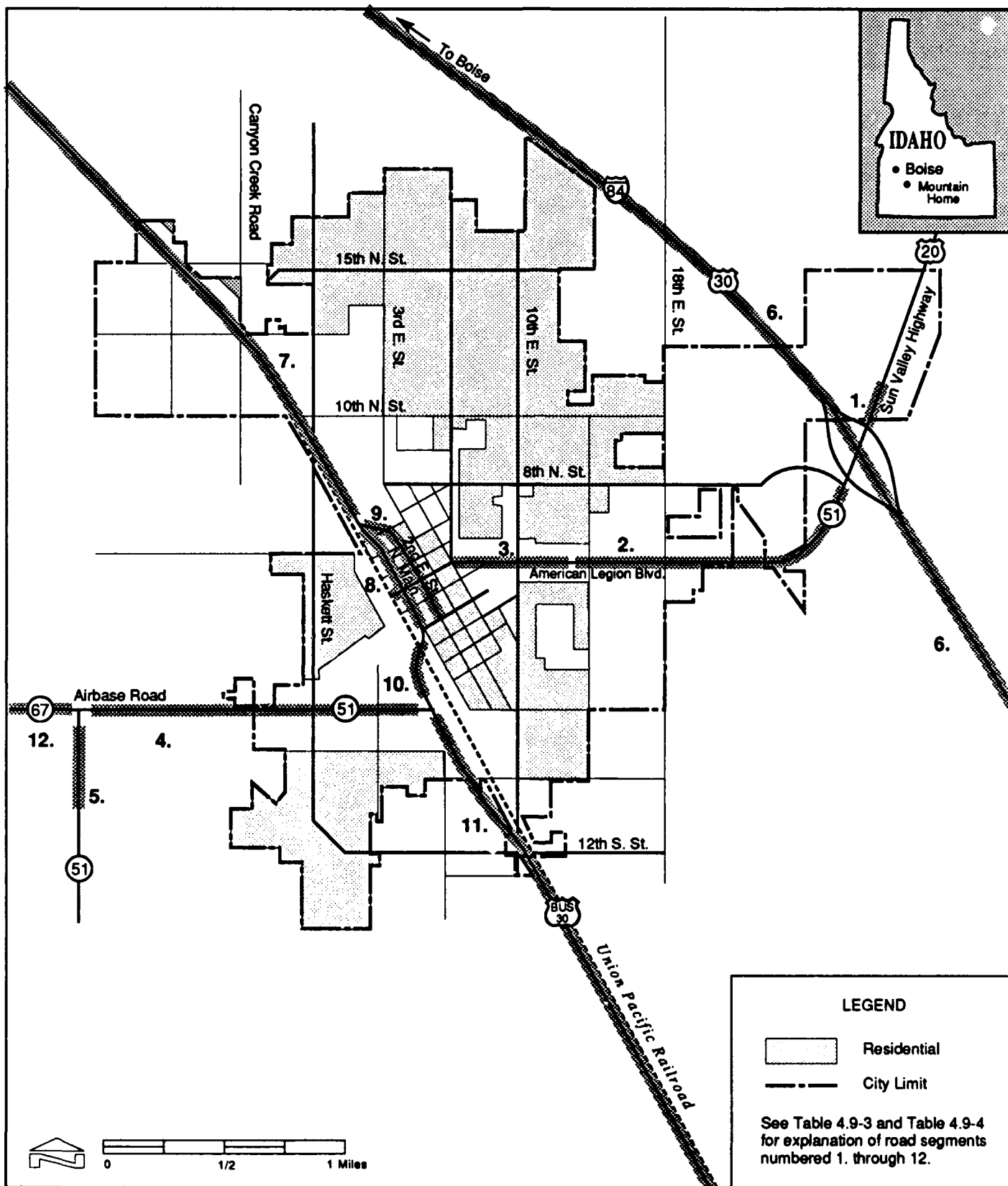


Figure M3.9-2
PRIMARY COMPONENTS OF MOUNTAIN HOME ROADWAY NETWORK

reconstruction and alignment projects for the section of I-84 from Exit 95 to approximately 5 miles east of Exit 99.

M3.9.3.2 U.S. Highways

Three U.S. Highways, 20, 26, and 30, traverse the Mountain Home area. (Where the U.S. Highways coincide with I-84, the roadway is analyzed as an Interstate.) U.S. Highway 30, which shares much of its length with I-84, separates from the interstate to provide a convenient business loop (I-84B) through the central business district of the city of Mountain Home. This 10.4-mile loop is four lanes from Exit 90 to downtown Mountain Home. It then splits to form two one-way segments for about 0.7 mile before joining again to provide a two-lane access back to I-84. The ADTs along the business loop range from about 3,000 to 11,000 vehicles for the various segments, with heaviest volumes occurring in the downtown area. IDOT characterizes the business loop as level-of-service A; however, because virtually all of MHAFFB commuter traffic uses a segment of I-84B, there is congestion at certain locations during peak hours.

U.S. Highway 20 enters the ROI along with I-84 and splits off from the interstate at Exit 95. The two-lane highway proceeds east through the mountains north of the city. This highway provides access, by way of connecting State Highway 75, to mountain resorts such as Sun Valley and to the Salmon River wilderness and recreation areas beyond. U.S. Highway 20 is not along the travel path between the base and principal residential areas of Mountain Home. Only the section of highway immediately northeast of I-84 is analyzed as part of the ROI, and like I-84, has a level-of-service A.

U.S. Highway 26 coincides with I-84 within the ROI; therefore, this segment is accounted for in the analysis of I-84.

Projects for U.S. highways are also identified in the IDOT Interstate 4R Development Program. One small project for fiscal 1994 consists of minor widening and resurfacing for US20 from Exit 95 to about 8 miles north of the interstate. Another project for replacing a railroad underpass on I-84B is discussed in section M3.9.3.4.

M3.9.3.3 State Highways

Within every state, highway departments have a system of roads designated as a state highway system. Two such highways are in the Mountain Home ROI, State Highways 51 and 67.

State Highway (SH) 51 begins at Exit 95 of I-84, proceeding through the city of Mountain Home (American Legion Boulevard, N. Main Street, and N. 3rd Street) to a point of intersection with the business loop, I-84B. SH51 coincides with I-84B from N. Main St. to the intersection of I-84B and

SH67. SH51 and SH67 are then combined for a little over a mile until SH67 extends west to the Base while SH51 continues to the south, providing access to the Snake River and the towns of Bruneau in Owyhee County and to Elko, Nevada.

SH51 provides the shortest route from the center of the city to I-84 and also provides access to many residential areas, making it one of the most heavily utilized roads in the ROI. The heaviest volume of traffic, however, is found on the section of highway that SH51 shares with SH67, which is part of the access route from the city of Mountain Home to the base. Despite the relatively heavy use of SH51, a level-of-service A is characteristic of the entire highway. From the intersection with SH67 to Bruneau, SH51 is a two-lane undivided highway. Four lanes are provided from this intersection and through the downtown area until the roadway merges back to two lanes just south of the interstate.

State Highway 67 (Airbase Road) begins in Mountain Home at an intersection with I-84B and extends 10 miles to the base. This highway is a four-lane undivided road designed for maximum speed access to the base. The ADT for this highway is approximately 6,500 vehicles, which yields a level-of-service A.

No improvements are currently planned to the state highways in the ROI except for the railroad underpass project discussed in section M3.9.3.4.

M3.9.3.4 Major Intersections

Because virtually all base commuter traffic must maneuver through the same intersection, the junction of I-84B and SH67 is included in this analysis. This "T" intersection has two phases with a cycle time of about 65 seconds. For one phase, the eastbound traffic on SH67 can turn left or right onto I-84B, with most of the volume turning left (north) toward the residential areas of Mountain Home. In the other phase, northbound traffic on I-84B can pass through the intersection or turn left toward the base, and southbound traffic can turn right toward the base or pass through the intersection. Right turns when the signal is red are allowed during both phases.

The level-of-service for this intersection is B, based on a design-hourly volume. However, this intersection experiences heavy volumes of traffic during the A.M. and P.M. peak commuting hours, which are roughly 7:00 to 8:00 A.M. and 4:00 to 5:00 P.M., respectively. An observation during these periods was performed to consider the operational efficiency of the intersection. During the A.M. peak hour, traffic moves relatively easily through the intersection. Most of the commuters enter from the north on I-84B and turn right onto SH67. During the P.M. peak, the intersection becomes quite congested, especially with eastbound traffic on SH67 requiring a left turn onto I-84B. This left turn lane has a continuous line of vehicles during the peak hour. Based on one weekday traffic count from

October 1989, the level-of-service for the intersection is B for the A.M. peak hour and D for the P.M. peak hour.

This intersection is the most problematic transportation component in the ROI. The problem is exacerbated by a Union Pacific railroad underpass located on I-84B several hundred feet north of the intersection. The underpass is narrow and on a curve and planned for replacement.

Preliminary development is in progress to replace this intersection and the existing underpass to allow traffic to move more safely and easily into the city's residential areas. The approved configuration will likely be either a new overpass or a new underpass, but several alternatives are being considered during this preliminary stage of development. The project is currently scheduled for construction in IDOT's 4R Development Program for fiscal 1995, but this schedule is subject to change and the project could possibly begin earlier.

Other intersections in the Mountain Home area are signalized where warranted. Most recently the intersection of American Legion Blvd. (SH51) and 10th Street was signalized. The city, in cooperation with IDOT, investigates problem intersections as they develop to determine if traffic signals are warranted.

M3.9.3.5 Other Collector and Local Roads

Numerous local and collector streets are located within the ROI but are too numerous to discuss individually. The city basically has a grid pattern with residential areas generally situated to the north and industry and businesses to the south.

M3.9.3.6 Mountain Home Air Force Base Roads

The roads at MHAFB essentially form a network completely independent from the city of Mountain Home. Commuters enter the base from SH67 and must immediately merge either right onto 9th Avenue or left onto Main Avenue. These two roads follow a "V" shape towards the flight line. Local roads branch to allow access to specific destinations within the base boundaries.

While no traffic counts have been performed, volumes on the base network are low. Once personnel arrive at their work location on the base, there is little need for vehicular movements to different locations. The heaviest vehicular volumes occur just before and after the day shift begins and ends, respectively. Traffic movements during the day are minimal, with the exception of a slight increase during the lunch hours.

No congestion problems exist on the base. Occasionally, a small queue of a few cars may occur as drivers attempt to exit residential areas; however, these problems have not warranted any signalization of intersections.

Maintenance of the system occurs on an as-needed basis. The most recent project involved construction of curb and gutters for about 90 percent of the roads on the base.

M3.9.4 Railroads

Only two rail lines are found in the ROI. The Union Pacific parallels I-84 from the north, and then follows the business loop through the downtown area of the city. Approximately 30 to 40 freight trains pass through the city of Mountain Home daily. Two AMTRAK trains also pass through the city each day (one in each direction). The service, which runs between Seattle and Salt Lake City, does not stop in Mountain Home.

There is also a rail spur from Mountain Home to the base. The spur is used primarily for coal shipments and as a backup means of receiving petroleum shipments should a pipeline break occur. Because the base is expected to change to a natural gas system, the spur may be abandoned in the future. The base is responsible for maintenance of this line.

M3.9.5 Air Transportation

The City of Mountain Home maintains an air strip west of the city along State Highway 67. Aircraft traffic is primarily composed of single engine, private aircraft, for which there are limited hangar and tie-down facilities. Charter flights can be arranged through the private firm that is under contract to operate the airfield.

There is no commercial airline currently serving the Mountain Home area. The nearest commercial air carrier is at the Municipal Airport in Boise, approximately 50 miles to the northwest.

M3.10 SOCIOECONOMICS

M3.10.1 Definition of Resources

A region's social and economic structure is composed of a number of interrelated resources. Increased employment, population, and income resulting from the realignment of personnel to MHAFB will influence other resources in the base's ROI, such as housing, community services, and utilities. The socioeconomics section synthesizes the attributes and issues related to the human environment that could be impacted by the realignment.

M3.10.2 Region of Influence

The socioeconomics ROI for the realignment of personnel to MHAFB has been established by the Office of the Secretary of Defense, Office of Economic Adjustment (OEA) to be the single county within which the base is located (Elmore County). Within Elmore County, the city of Mountain Home, located approximately 10 miles northeast of the base, will be the community most affected by the realignment. As shown in Table M3.10-1, 94 percent of MHAFB military personnel and 89 percent of base civilian personnel living off-base currently reside in Mountain Home. The remaining personnel living off-base reside in other local communities (e.g., Glenns Ferry) or live in Boise and commute to the base.

Table M3.10-1

Mountain Home Air Force Base Personnel by Area of Residence
(As of June 30, 1989)

	<u>On Base</u>	<u>Mtn. Home Area</u>	<u>Boise Area</u>	<u>Elsewhere</u>	<u>Total</u>
Military	2,147	1,106	62	8	3,759
Civilian	45 ^a	395	40	9	489
TOTAL	2,192	1,501	102	17	4,248

Note: a. Civilian employees residing on base are spouses of military personnel.

Source: ACC, Mountain Home AFB 1989.

M3.10.3 Population

Following moderate growth in the early 1980s (1.6 percent per year), the population of Elmore County has remained relatively stable. A recent influx between 1987 and 1988 led to a total county population

of 23,478 (Idaho Job Service 1989). With an estimated 1.9-percent annual growth rate, the county population is expected to reach 26,284 in 1994 (see Table M3.10-2). This growth is primarily attributable to natural increases in the current population rather than in-migration.

Table M3.10-2

**Population in the Mountain Home Air Force Base Region of Influence
(Population by Year¹)**

<u>Jurisdiction</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>
Elmore County	23,924	24,379	24,842	25,314	25,795	26,284
Mountain Home	8,900	9,069	9,241	9,417	9,596	9,778

Notes: 1. Population projections are based on a 1.9-percent annual growth rate and do not include growth generated by the realignment of MHAFB.

Source: Idaho Economic Development Center 1988; SAIC 1989.

The most recent (1986) population estimate for Glenns Ferry is 1,500 (Idaho Department of Commerce 1989). The population of the city of Mountain Home was 7,522 in 1980 and is estimated to have grown to roughly 8,900 in 1989. Most population growth is from retirement of military personnel; there are about 2,500 such residents in Mountain Home (personal communication, Greene 1989).

Using the county growth rate of 1.9 percent, the population of Mountain Home by 1992 is predicted to be approximately 9,417 without any personnel realignment at MHAFB.

M3.10.4 Employment and Income

The economy of Elmore County is essentially agricultural, with the exception of activity related to MHAFB and a small number of manufacturing firms. The total number of jobs in the county in 1988 was 7,847, up over 25 percent compared to 1980 (Idaho Department of Employment 1989).

Total employment in non-agricultural sectors is shown in Table M3.10-3. Government jobs account for the largest proportion (about 43 percent) of non-agricultural employment, followed by trade (23.8 percent), and services (13 percent). Other sectors, such as manufacturing and construction, constitute a relatively small proportion of non-agricultural employment. Elmore County employment forecasts for 1990 are shown in Table M3.10-4.

Overall unemployment in Elmore County averaged 5 percent in 1988, the lowest rate in 10 years and much lower than the 8-percent unemployment recorded during the 1982 recession. However, the

Table M3.10-3

NONAGRICULTURAL WAGE AND SALARY EMPLOYMENT
Elmore County, 1987

<i>Sector</i>	<i>Employment</i>	<i>Percent of Total</i>
Manufacturing	284	6.5
Construction	219	5.0
T.C.U. ¹	148	3.4
Trade	1,046	23.8
F.I.R.E. ²	225	5.1
Services	573	13.0
Government	1,904	43.3
TOTAL	4,399	100.0

Notes: 1. Transportation, Communications, and Utilities.
2. Finance, Insurance, and Real Estate.

Source: Idaho Department of Employment 1989.

Table M3.10-4
EMPLOYMENT FORECASTS BY SECTOR
Elmore County, 1990

<i>Sector</i>	<i>Employment</i>	<i>Percent of Total</i>
Agriculture	1,753	23.8
Manufacturing	225	3.1
Construction	116	1.6
T.C.U. ¹	339	4.6
Trade	1,134	15.4
F.I.R.E. ²	230	3.1
Services	625	8.5
Government	2,183	29.7
Non-Farm Proprietors	755	10.3
TOTAL	7,360	100.0

Notes: 1. Transportation, Communications, and Utilities.
 2. Finance, Insurance, and Real Estate.

Source: Idaho Economic Development Center 1988.

unemployment rate during the first quarter of 1989 increased to a monthly average of almost 7 percent (U.S. Bureau of Labor Statistics 1989).

Civilian employment in the Mountain Home area is concentrated in retail trade and service activities related to the base (Idaho Job Service 1989). General business conditions in the Mountain Home area are considered stable, with an estimated 1.5- to 2-percent growth per year for the last six years (personal communication, Greene 1989).

The primary public employers in the Mountain Home area are MHAFB and the Mountain Home school district, while the largest private employers include the Gear Jammer and Albertson's grocery.

Total personal income in Elmore County was \$217.9 million in 1986, the last year reported. Median income for a family of four was almost \$16,000 in 1987, increasing to \$23,700 in 1989, a 34-percent change (IDA-ORE Planning and Development Association 1989). Per capita personal income was \$9,917 in 1986, up 21 percent compared to 1983.

M3.10.5 Housing

M3.10.5.1 Off-Base Housing

Based upon the residential distribution of existing base personnel, realignment-generated demand for housing will be concentrated in the community of Mountain Home and the surrounding unincorporated areas. Consequently, the discussion of existing conditions for housing focuses on this localized housing market area (HMA).

Housing includes all apartments, houses, and mobile homes available within the HMA, whether they are owned, rented, or vacant. According to the 1980 census, the city of Mountain Home had a total of 3,088 housing units and a population of 7,522, or 2.4 persons per housing unit. Of the 3,088 houses counted in the 1980 census, 866 were built between 1970 and 1980 and 2,222 were built prior to 1970. Records for water and sewer hook-ups and construction permits indicate that 326 new housing units have been built in the city since 1980 (see Table M3.10-5), for a total current housing inventory of 3,414. With a stable population of 8,900, the number of persons per housing unit in Mountain Home is currently 2.6.

Most of the housing inventory in Mountain Home consists of detached, single family houses. Multi-family housing in the Mountain Home HMA consists of six apartment complexes, providing a combined total of 126 rental units, and several 2- to 4-plexes. The Blue Sky, Hamilton Court, and Parkview complexes provide a total of 34 2-bedroom units; Day Meadows, Escoshio, and Fairway offer

Table M3.10-5

RESIDENTIAL BUILDING PERMITS 1980 - 1989¹

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	Total	Annual Average
City of Mountain Home ²	N/A ³	21	12	51	34	49 ⁴	34	57	36	32 ⁵	326	35.2
Unincorporated Areas of Elmore County ⁶	56	37	20	64	38	58	41	49	36	N/A	399	44.3
TOTAL	N/A	58	32	115	72	99	75	106	72	N/A	---	78.6

Notes:

1. New residential structures only. Improvements to existing properties are not included.
2. Data for city permits are from October of each year.
3. Data not available.
4. Of 41 permits, two were for duplexes and one was a 7-unit structure for a total of 49 units constructed.
5. Based on recorded data for October 1988 to July 1989 (26 permits) plus the 1989 monthly average (2.6 permits) for each of the remaining two months.
6. County data are from January 1 to December 31 of each year. It is assumed that most if not all of the permits issued for unincorporated areas of the county refer to land surrounding the city of Mountain Home.

Source: Mountain Home City Engineers Office 1989; Elmore County Planners Office 1989.

92 units of various sizes. A senior citizen complex, Sunset Apartments, has 24 1-bedroom and 8 2-bedroom units.

Of the total off-base housing inventory, 1,889 units (55 percent) are owner-occupied and 1,516 (45 percent) are rentals. People who intend to purchase a home typically rent for six months first. The average selling time for a house in Mountain Home is six months, and the average selling price from January to July of 1989 was \$44,500 (personal communication, Costanzo 1989). Mortgage records indicate that 475 homes were sold in the community in 1988, and 195 closings were recorded for the period from January to May 1989. The peak selling season for the area is May through October. The current supply of homes for purchase is 279 (see Table M3.10-6).

There are currently 1,516 apartments, houses, or mobile homes available to rent in the HMA. Table M3.10-7 shows the number of each rental type by structure type; Table M3.10-8 shows the total rental stock distributed by number of bedrooms and price range.

There are 17 mobile home parks in the vicinity of Mountain Home, providing a total of 718 sites for owned and rented mobile homes. However, five of these parks are judged by MHAFB housing referral office to be substandard housing, reducing the available number of sites to 626. The current number of occupied and vacant lots and the number of renter-occupied, owner-occupied, and vacant units are shown in Table M3.10-9.

M3.10.5.2 On-Base Housing

The distribution of existing military family housing (MFH) by rank and number of bedrooms is shown in Table M3.10-10. There are currently 1,521 MFH units on MHAFB. Of these, 246 units are occupied by officers and 1,275 are occupied by enlisted personnel in grades E-4 and above. There are no housing units on-base designated for airmen below E-4. Airmen in grades E-3 and below may apply for on-base housing, but will only be allocated housing when a surplus exists. The waiting list for on-base housing is currently 30 to 60 days for company grade officers' quarters, 0 to 30 days for enlisted E-4 and above, and 18 to 24 months for enlisted E-3 and below. On average, 5 percent of the total MFH stock is unavailable at any given time due to maintenance and repairs. Of the remainder, the typical occupancy rate is 97 percent.

M3.10.6 Community Facilities and Services

Community facilities and services include schools, police and fire protection, health services, and utilities. The location of selected public facilities in Glenns Ferry and Mountain Home are shown in figures M3.10-1 and M3.10-2.

Table M3.10-6

**DWELLING UNITS CURRENTLY FOR SALE IN THE HOUSING
MARKET AREA
Houses and Mobile Homes**

<i>Sale Price</i>	----- NUMBER OF BEDROOMS -----					<i>Total</i>
	<i>One</i>	<i>Two</i>	<i>Three</i>	<i>Four</i>	<i>≥ Five</i>	
<\$20,000	1	2	--	--	--	3
20-30,000	1	9	--	--	--	10
30-40,000	1	38	11	--	--	50
40-50,000	--	11	40	4	1	56
50-60,000	--	1	34	10	--	45
60-70,000	--	1	27	8	1	37
70-80,000	--	2	16	7	--	25
80-90,000	--	--	10	6	--	16
90-100,000	--	--	11	5	1	17
>100,000	--	--	10	7	3	20
TOTAL	3	64	159	47	6	279

Source: Century 21; Mitchell Real Estate; Mountain Home Agency; Streeter Real Estate; Swank Real Estate; West Wind Properties; Mountain Home News, July 5, July 12, July 19, July 26 1989.

Table M3.10-7**1989 INVENTORY OF RENTALS IN THE HOUSING MARKET AREA, BY STRUCTURE TYPE**

<i>Number of Bedrooms</i>	<i>Apartments</i>	<i>Houses</i>	<i>Mobile Homes</i>	<i>Total</i>
1	187	95	21	303
2	280	210	292	782
3	31	237	101	369
4	--	54	3	57
5 or more	--	5	--	5
TOTAL	498	601	417	1,516

Source: Housing Referral Office, MHAFB 1989.

Table M3.10-8

**1989 INVENTORY OF RENTALS IN THE HOUSING MARKET AREA¹
BY PRICE AND SIZE**

<i>Total Occupancy Cost²</i>	----- NUMBER OF BEDROOMS -----					<i>Total</i>
	<i>One</i>	<i>Two</i>	<i>Three</i>	<i>Four</i>	<i>≥ Five</i>	
< \$200 - 299	99	346	83	3	0	531
\$300 - 399	174	280	28	0	0	482
\$400 - 499	30	117	148	9	0	304
\$500 - 599	0	39	55	14	0	108
\$600 - 699	0	0	37	19	1	57
\$700 - 799	0	0	18	6	1	25
\$800 - 899	0	0	0	3	2	5
≥ \$900	0	0	0	3	1	4
TOTAL	303	782	369	57	5	1,516

Note: 1. A detailed inventory of rentals is not available. Estimates presented in this table are based on the Housing Referral Office inventory, available listings at the HRO, and vacancies reported by local realty companies.
2. Includes rent per month plus utility costs of approximately \$100 per month.

Source: Century 21; West Wind Properties; Streeter Real Estate 1989.

Table M3.10-9

INVENTORY OF MOBILE HOME PARKS IN THE MOUNTAIN HOME HMA¹

<i>Index of Mobile Park</i> ²	<i>Available Lots</i>	<i>Occupied Lots</i>	<i>Vacant Lots</i>	<i>Rental Units</i>	<i>Owner- Occupied Units</i>	<i>Vacant Units</i>
1.	103	83	20	11	72	0
2.	27	24	3	19	5	0
3.	30 ³	--	--	--	--	--
4.	14	14	0	13	0	1
5.	90	45	45	10	35	0
6.	13 ³	--	--	--	--	--
7.	170	140	30	24	103	13
8.	21 ³	--	--	--	--	--
9.	13 ³	--	--	--	--	--
10.	112	54	58	2	49	3
11.	34	29	5	10	13	6
12.	15 ³	--	--	--	--	--
13.	19	16	3	10	5	1
14.	19	14	5	12	2	0
15.	4	4	0	0	4	0
16.	22	14	8	1	13	0
17.	12	12	0	8	2	2
TOTAL	718	449	177	120	303	26

- Note:**
1. Units available in mobile home parks do not constitute the full range of available mobile homes. Some units may be available outside of these parks.
 2. Index numbers refer to specific mobile home parks. The names of the individual parks are not cross-referenced to the index numbers for purposes of confidentiality.
 3. These mobile home parks do not meet Air Force regulations for adequate military housing.

Source: Canyon Creek Mobile Home Community, Family Rentals Trailer Court, Fields Trailer Court, Golden Rule KOA Trailer Court, Meadows Mobile Home Park, Park Central Trailer Park, Pleasant Acres Mobile Park, Rose Garden Trailer Court, Sagebrush Trailer Park, Skyline Acres, Wagon Wheel Trailer Court, Westside Trailer Court, Housing Referral Office, MHAFFB 1989.

Table M3.10-10

**CURRENT AND PROJECTED ON-BASE SUPPLY OF MILITARY
FAMILY HOUSING (MFH)**

	----- NUMBER OF BEDROOMS-----			
	<i>Two</i>	<i>Three</i>	<i>≥ Four</i>	<i>Total</i>
<hr/>				
<u>Existing Units</u>				
Officers				
O-10 to O-6	0	0	5	5
O-5 to O-4	0	63	24	87
O-3 to O-1	0	128	26	154
SUBTOTAL	0	191	55	246
Enlisted				
E-9 to E-7	25	97	71	193
E-6 to E-4	367	563	152	1,082
E-3 to E-1	0	0	0	0
SUBTOTAL	392	660	223	1,275
TOTAL EXISTING UNITS	392	851	278	1,521

Sources: December 1988 housing survey, Housing Referral Office, Mountain Home AFB 1989; personal communication, Mannion 1989.

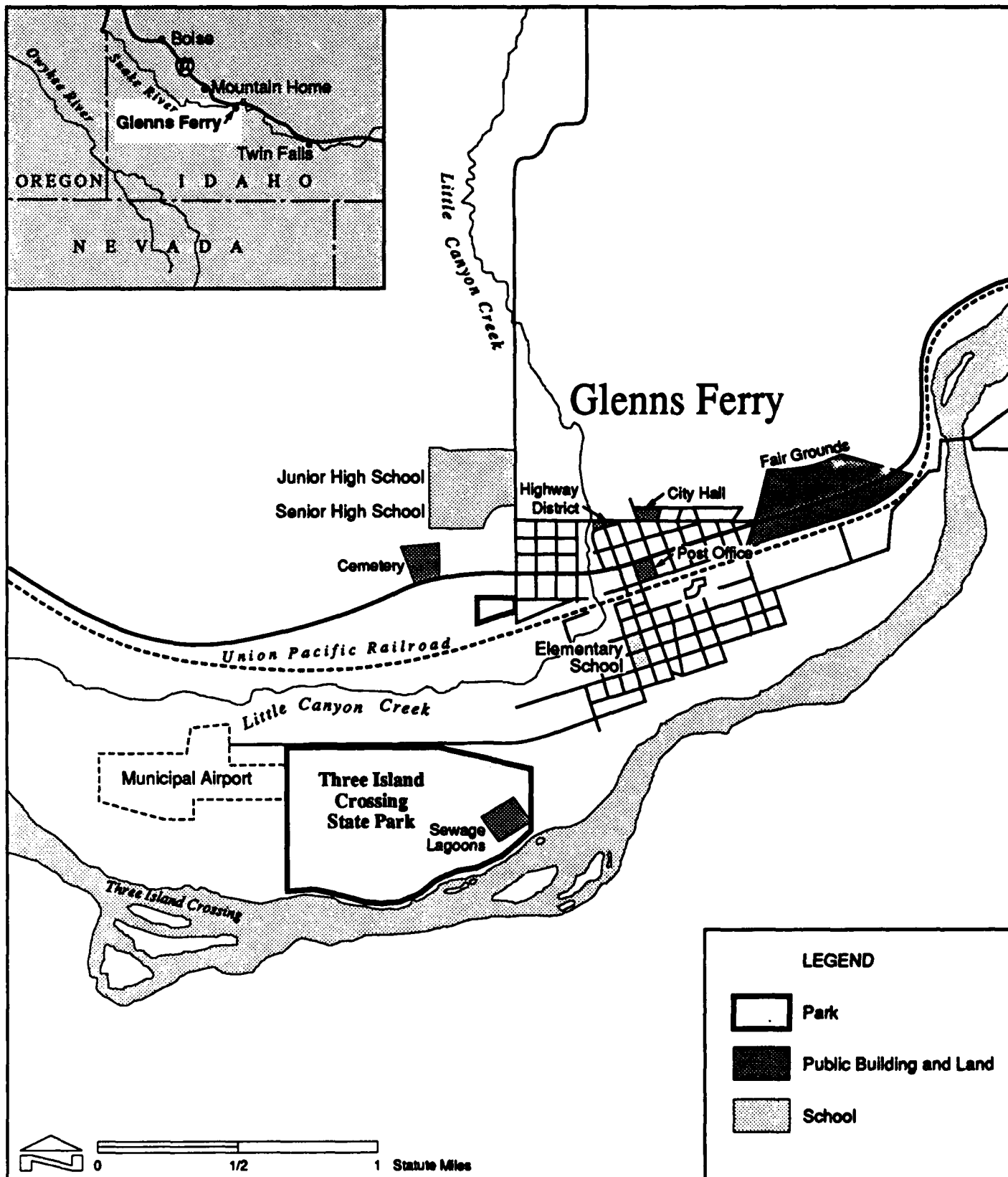
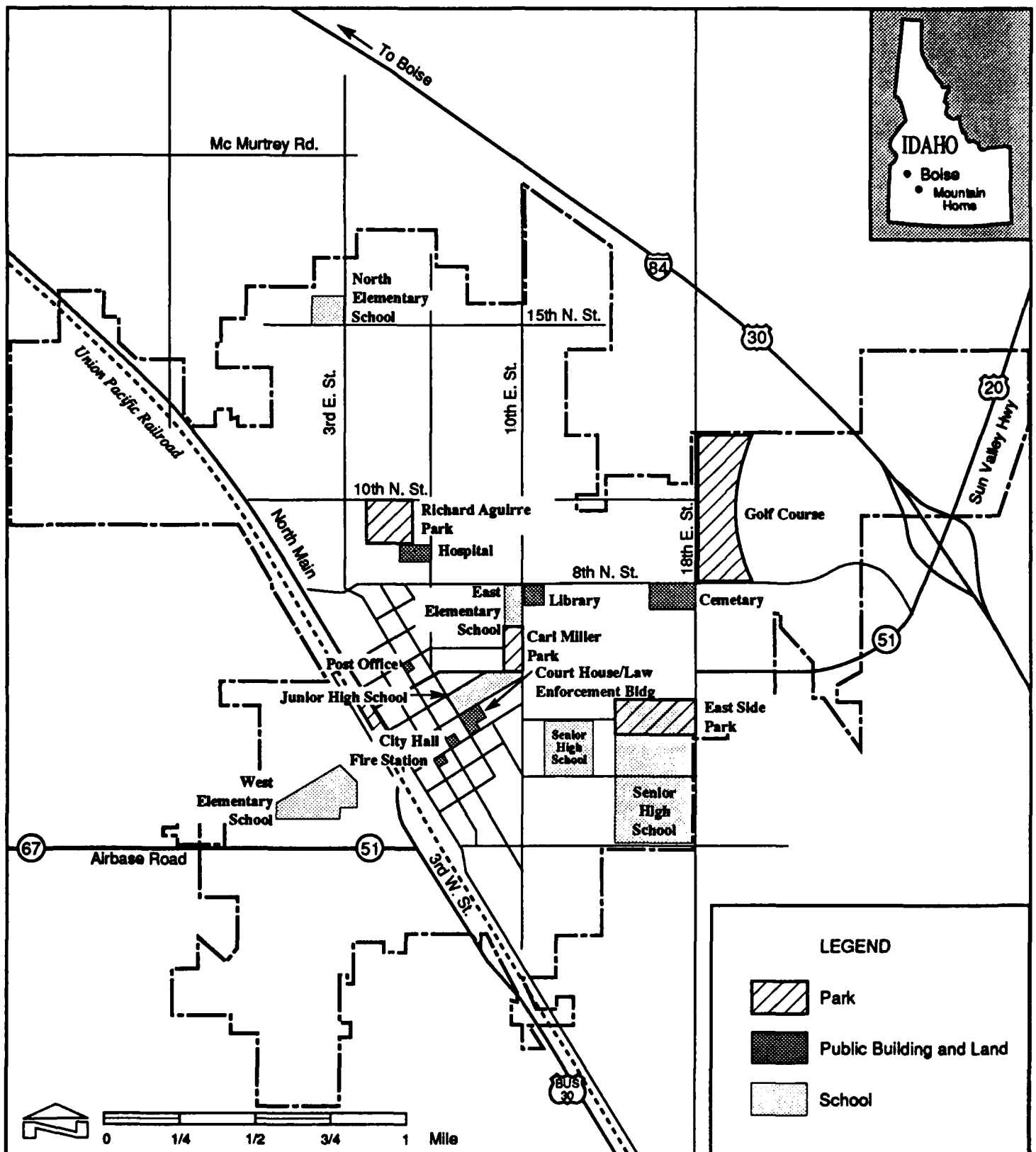


Figure M3.10-1
PUBLIC FACILITIES
GLENN'S FERRY



M3.10.6.1 Education

The two major public school districts in Elmore County are District 192 (Glenns Ferry) and District 193 (Mountain Home). Historical enrollment figures for each district are provided in Table M3.10-11. District 192 reported a total enrollment of 626 students for 1987/1988 and District 193 served 3,544 students in 1988/1989, a 5- and 11-percent decrease, respectively, compared to average enrollments a decade ago.

District 193 currently has space for 4,339 students. The occupancy rate for the district in 1988 was 81 percent (see Table M3.10-12). MHAFB schools had the lowest occupancy: 63 percent for the junior high, 76 percent for the primary school, and 78 percent for the intermediate school. The North Elementary School had the highest occupancy (90 percent) of any facility in the district.

The Mountain Home School District receives Federal Education Impact Aid (FEIA) funds in lieu of property taxes that are not paid on federal property by the federal government to state and local governments. The aid is based on the number of military dependent children enrolled in the school district, their place of residence, and their average daily attendance (ADA) at the public schools. The level of FEIA funding varies by the type of education program required for the student. A higher level of funding is offered for special education students, and additional impact funding is also provided for students that reside in low impact areas.

For FEIA funding, students are placed in two categories: category "A" students live on federal property with at least one parent who is a uniformed military employee, and category "B" students reside off base with a uniformed military parent(s). Students residing off-base with a civilian parent employed by the military are classified as "B" students.

There are presently 1,830 military-related students enrolled in District 193 facilities. Over 60 percent (1,160 students) are "A" category, the remainder (770 students) are "B" category. The Mountain Home School District received \$1,437 for every "A" student and \$152 for every "B" student in fiscal 1989 for a total FEIA funding of \$1,783,960.

M3.10.6.2 Police and Fire Protection

The Elmore County Sheriff's Department serves the unincorporated areas of the county. There are currently 21 staff positions in the department. The department is currently at capacity for service to recreational areas in the county (personal communication, Schilz 1989). The sheriff's department also coordinates with four resident Idaho State Police officers in Elmore County.

Table M3.10-11

ELMORE COUNTY PUBLIC SCHOOL ENROLLMENT
(1976/1977 to 1980/1981)

		----- SCHOOL YEAR -----				
<i>District</i>	<i>Grade</i>	<i>76-77</i>	<i>77-78</i>	<i>78-79</i>	<i>79-80</i>	<i>80-81</i>
<hr/>						
Glenns Ferry (District 192)						
High School	9-12	215	211	201	170	162
Junior High	7-8	94	84	83	82	90
Elementary	1-6	345	391	378	388	402
DISTRICT 192						
TOTAL		654	686	662	640	654
Mountain Home (District 193)						
High School	10-12	787	832	827	782	746
Junior High	7-9	607	622	613	571	574
AB Junior High ¹	7-9	361	321	280	221	221
East Elementary	1-6	294	315	334	353	352
	K	49	58	63	45	35
North Elementary	1-6	281	324	348	365	368
	K	48	50	50	60	53
West Elementary	1-6	408	484	420	456	429
	K	55	60	55	71	76
AB Intermediate ¹	4-6	370	456	324	307	330
AB Primary ¹	1-3	434	511	491	447	437
	K	175	162	160	143	159
DISTRICT 193						
TOTAL		3,869	4,195	3,965	3,821	3,780

Note: 1. AB refers to MHAFB.

Source: Elmore County Comprehensive Plan 1980.

Table M3.10-12

**ENROLLMENT CAPACITY OF SCHOOLS IN
THE MOUNTAIN HOME SCHOOL DISTRICT
(1988)**

<i>School</i>	<i>Enrollment</i>	<i>Capacity</i>	<i>Seats Available</i>	<i>Percent Occupancy</i>
High School	661	830	169	80
Junior High	590	700	110	84
AB Junior High ¹	205	325	120	63
East Elementary	370	420	50	88
North Elementary	437	485	48	90
West Elementary	491	573	82	86
AB Intermediate ¹	404	516	112	78
AB Primary ¹	370	490	120	76
Total	3,528 ²	4,339	811	81

Notes:

1. AB refers to MHAFB.
2. Enrollment for 1988/1989 was 3,544.

Both Glenns Ferry and Mountain Home have city police departments. The Glenns Ferry Department maintains a staff of two full-time and six part-time employees providing 24-hour police protection (personal communication, Messerly 1989). The Mountain Home Police Department patrols properties within the Mountain Home city limits on a regular basis. The department consists of a 22-person force in two divisions (personal communication, George 1989). The city also maintains a volunteer reserve force of 14 people. The capacity to handle current dispatch traffic has reached saturation; the state police and county sheriff's office have added extra patrols, and the police department also provides dispatch services for ambulance and fire protection requirements.

When required, MHAFB provides emergency support to the county. This support is provided by a Security Police Bomb Detection Team and an Explosive Ordnance Team, and as well as investigative support from the Special Investigations Office and the security police. Approximately 150 security personnel work on the base (personal communication, Gibbon 1989).

Both Glenns Ferry and Mountain Home are served by volunteer fire departments. The Mountain Home Fire Department consists of 31 paid volunteers. The department operates two stations located in the north and central business districts of the community. The average response time to a fire call is under three minutes. The department was given a 4 rating, the second highest rating of any department in the state, by the Idaho Surveying and Rating Bureau (personal communication, Hiler 1989). More details regarding the Mountain Home Fire Department and the MHAFB department can be found in sections M3.12 and S3.12 (Safety).

M3.10.6.3 Health Services

The state of Idaho provides health services to residents of Elmore County. The State Department of Health and Welfare is organized according to two divisions, the Division of Health (responsible for resources related to preventive medicine, food inspection, and epidemiology) and the Division of Environmental Health (responsible for issues regarding water quality, air quality, and hazardous waste). Mountain Home is located in the Central District, which includes Ada, Boise, Elmore, and Valley counties (personal communication, Fox 1989). The Environmental Health Division maintains a two-person staff in Mountain Home for compliance with and enforcement of division guidelines and regulations.

Elmore County is served by the 83-bed Elmore Memorial Hospital and Nursing Home located in Mountain Home. Glenns Ferry has a new outpatient clinic with two doctors, one full-time and one part-time (personal communication, Messerly 1989). Ambulance service is also provided.

MHAFB has a hospital with 20 beds, with an occupancy rate of about 67 percent (Radford 1989). A new 31-bed hospital was placed into service in October 1989. The new facility offers orthopedic services and may provide other clinics as required.

M3.10.6.4 Utilities

Water

Mountain Home, Glens Ferry, and MHAFB have their own municipal water supply systems, while the unincorporated areas in Elmore County have no public systems. The city of Mountain Home provides water for residential and commercial users from municipal wells and two storage tanks (one 500,000-gallon tank composed of steel and one 2-million-gallon tank made of concrete) with a combined capacity of 2.5 million gallons. The maximum daily production is 11.5 mgd; average usage is 3 mgd, and maximum usage is 7 mgd. The water division of the public works system employs four people full-time.

Water service in Mountain Home is currently at capacity; the city presently experiences problems with low water pressure during peak demand hours, especially during the summer (personal communication, Raymond 1989). The city's immediate need is to balance (interconnect) the two tanks to alleviate some of the low pressure problems. In addition, a new one-million-gallon storage tank is planned to be located northeast of the city to provide water to the Gear Jammer restaurant, the Best Western motel, and also to provide the capability for further development in the area. The city is pursuing a local bond issue to finance these projects.

More information pertaining to local water supply and demand can be found in sections M3.11 and S3.11 (Water Resources).

Wastewater

The only public sewerage facilities in Elmore County are located in Mountain Home, Glens Ferry, and the base. Unincorporated areas utilize individual septic tank and drain fields, though some areas are served by joint collection systems with one septic tank with a drain field. For wastewater treatment and disposal, the city of Mountain Home utilizes evaporation lagoons, including approximately 871 acre-feet of treatment lagoons and 258 acre-feet of storage lagoons. The current capacity of the system is 1.7 mgd, with a 47 percent of capacity average daily usage. Two new lagoons are planned for the city, each with a surface area of 25 acres and a depth of 7.48 feet, amounting to 187 acre-feet of effluent storage area. Currently, there is no off-base discharge and no permit is required.

The wastewater collection system at MHAFB consists of a combination of gravity lines and force mains (USAF 1989). Sewage is collected and transported from base facilities in a pipe network ranging in size from 5 to 6 inches in diameter. Wastewater is eventually collected into a 24-inch interceptor that transports the sewage to the wastewater treatment facility on the west side of the base.

The wastewater treatment facility utilizes a four-cell lagoon evaporation system. The system is composed of an influent pump station that pumps wastewater into the first lagoon cell. The sewage then flows by gravity into the remaining lagoon cells as capacity is required. The lagoons encompass approximately 73 acres and are about 5 feet deep. The lagoon system is illustrated in Figure M3.10-3.

Solid Waste

Active landfill sites for solid waste disposal in Elmore County are near Mountain Home, Glens Ferry, and Atlanta. The county is currently using a new 800-acre landfill located approximately 8 miles from Mountain Home. At present rates, this landfill is projected to be usable for 30 years. Solid waste collected in unincorporated areas is transported from transfer stations to the landfill sites.

The city of Mountain Home currently operates with three garbage trucks. Two of the trucks are used for twice-weekly hauling 6 days a week. The other truck is a back-up. Currently, one new truck is needed to replace one of the older ones and accommodate the increased distance to the new landfill; the old landfill was located just beyond the city limits and required a maximum haul of only 2 miles. The city sanitation department is staffed with six employees.

Power

Electrical power for most of Elmore County is supplied by the Idaho Power Company. Electricity is generated by 16 hydro plants, three coal-fired plants, and one gas plant. In 1988, the communities of Mountain Home, Bruneau, and Grand View consumed more than 320 million kilowatts (kW) of electricity in 1988, and Glens Ferry, Hammett and King Hill consumed about 130 million kW (personal communication, Lynard 1989). Idaho Power currently has excess capacity, with no plans for expansion of service until after the year 2000 (personal communication, Walker 1989). Transmission lines are shown in Figure M3.10-4.

MHAFB is served by two transmission lines that terminate at the same substation. One of the lines is 138 kV, the other line is 69 kV. The base distribution system is currently being considered for upgrading.

The Inter-Mountain Gas Company provides gas to Elmore County communities. In 1988, the city of Mountain Home used about 2.6 million therms and Glens Ferry about 375 thousand therms. The

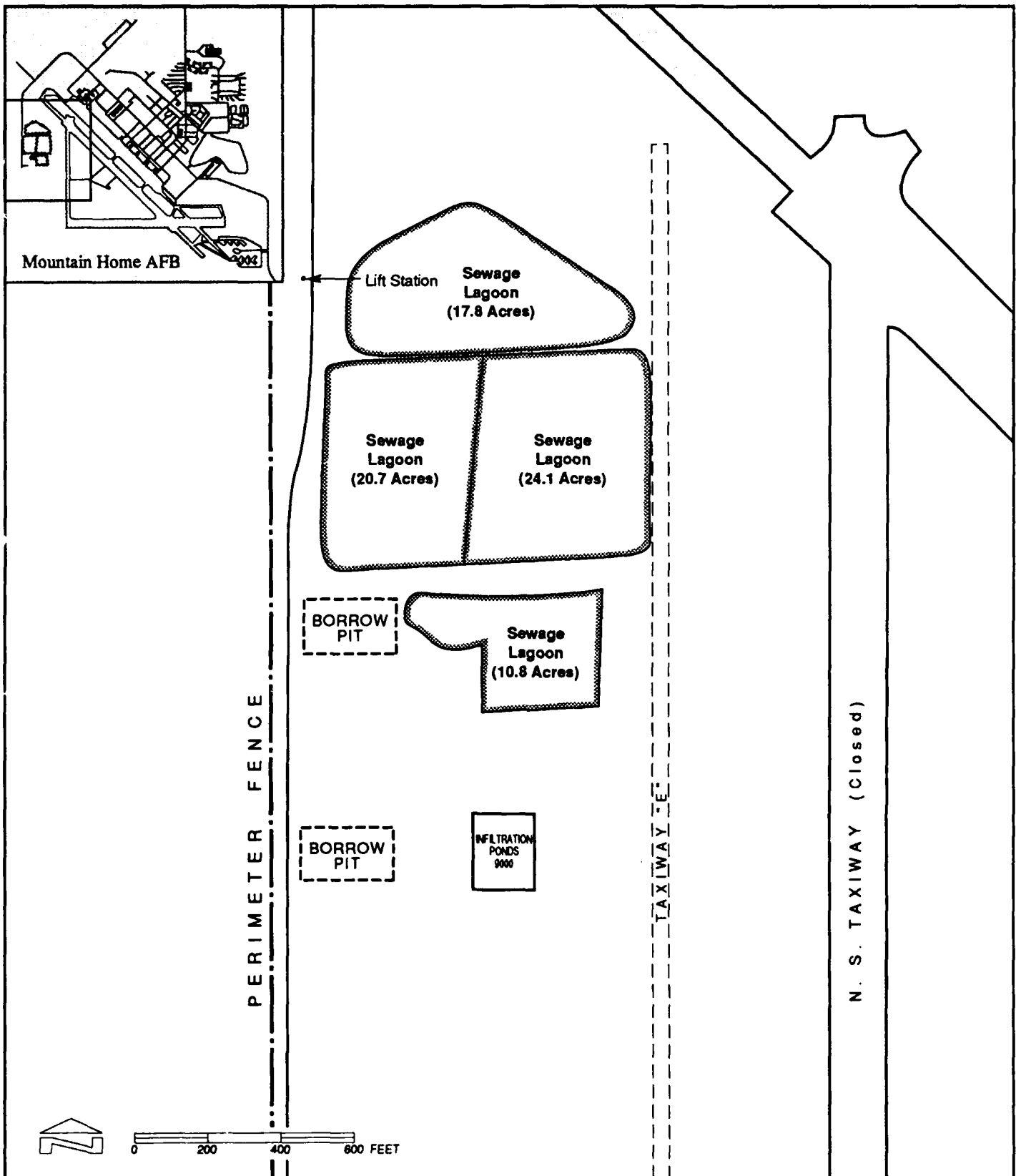


Figure M3.10-3

SEWAGE LAGOON SYSTEM
MOUNTAIN HOME AFB

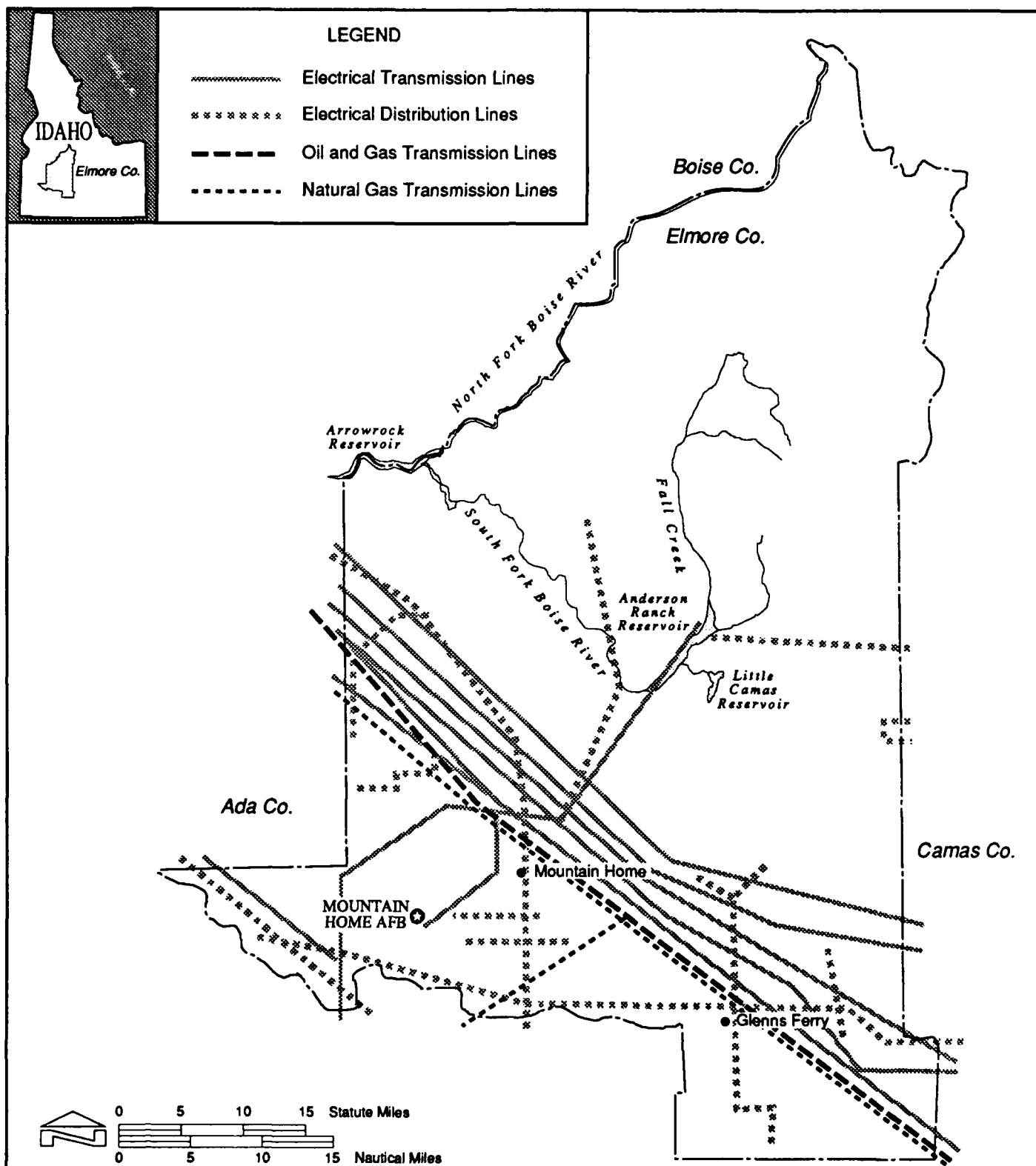


Figure M3.10-4

**POWER TRANSMISSION AND DISTRIBUTION LINES
ELMORE COUNTY**

total gas consumption in the county was almost 4 million therms. MHAFB, which is situated along a main pipeline, utilized almost 900 thousand therms in 1988. The system currently has excess capacity (personal communication, Bourdeaux 1989).

In addition to electrical and gas consumption, MHAFB utilizes a central heating system consisting of High Temperature Hot Water (HTHW) supplied by a central heating plant. The plant consists of two 65 million Btu per hour (MBtuH) and two 32MBtuH coal-fired hot water generators. In 1991, the base plans to convert the coal-fired generator plants to gas. This conversion will effectively eliminate the use of coal on the base (personal communication, Swanson 1989).

M3.10.7 Public Finance

Public finance is related to the revenues and expenditures of county and city governments and special districts in the ROI. Budgets in these jurisdictions are established to allocate a broad spectrum of services to residents, including public health and safety services, public works programs, administrative and legal operations, and education and recreation programs. Revenues for these services are drawn from an equally broad number of sources, including property taxes, sales taxes, local taxes and fees, and various subventions from state and federal sources.

The proposed budget for the city of Mountain Home for fiscal 1990 is \$5,674,396 (Mountain Home City Clerk 1989). This represents over a 20-percent increase compared to the fiscal 1989 budget and over a 70-percent increase compared to fiscal 1988. Almost 50 percent of the proposed 1990 expenditures for the general fund (about \$1.6 million) would be for the police department and dog pound. The greatest expenditure among the total proposed operations funds (about \$1.9 million) would be for water system maintenance.

M3.11 WATER RESOURCES

M3.11.1 Definition of Resource

Water resources considered for assessment of MHAFB realignment impacts include surface water and groundwater availability and use, water quality, and water rights.

M3.11.2 Region of Influence

The region of influence for water resources includes MHAFB and the city of Mountain Home. Specifically, attention will focus on the major water sources available to both the base and the city, and the current use of these resources.

M3.11.3 Water Availability and Use

M3.11.3.1 Surface Water

MHAFB and the city of Mountain Home lie on the Mountain Home Plateau, an area encompassing approximately 1,200 square miles on the western Snake River Plain in southwestern Elmore and southern Ada counties. Within the plateau, both the base and the city lie in a small drainage basin that occupies about 55 square miles. Average annual precipitation in the area is 9 inches, with less than 1 inch falling each month July through September (McGranahan, Messenger, Associates 1989). No perennial streams cross the Mountain Home Plateau. The mountains bordering the plateau to the north are drained by intermittent streams which flow southward into the Snake River.

MHAFB lies near the center of the drainage basin, and approximately 80 percent of the surface water flow within the basin flows across the base. In general, surface water flows across the base from the northeast to the southwest and into Canyon Creek, which drains southward into the Snake River. The only open bodies of water on MHAFB are sewage lagoons located along the western boundary of the base (see also Figure M3.10-3). However, there are small playas near the base. In areas not drained by Canyon Creek, the playas serve as low-point collection areas for surface water runoff. Since the playas have no surface outlet, any water they collect is lost to evapotranspiration or infiltration (see also section M3.4.5, Aquatic Biota).

Surface water in the vicinity of Mountain Home consists of Miller Canal, the East Side Canal, the West Side Canal, and Rattlesnake Creek, all of which drain to the south toward the Snake River. Rattlesnake Creek has been impounded to form the Mountain Home Reservoir northeast of town. The Mountain Home Reservoir has a storage capacity of 5,100 acre-feet. It receives water from

surface run-off and the Long Tom and Little Camas reservoirs, which have capacities of 3,800 acre-feet and 24,000 acre-feet, respectively (personal communication, Colthorp 1989). Farmland in the Mountain Home Agricultural District, approximately 4,500 acres, receives irrigation water from the Mountain Home Reservoir and groundwater sources. Within the District, there are 129 users of reservoir water. The allotment of water for each user is one share, or 3 acre-feet per acre per growing season. This allotment is not adequate to meet the irrigation needs of some of the larger farms in the District; these growers supplement their allotments with groundwater. The total water allotted from the Mountain Home Reservoir for the 1989 growing season was more than 12,000 acre-feet. MHAFB does not receive a water allotment from the reservoir.

M3.11.3.2 Groundwater

The Bruneau Formation of the Idaho Group is the principal aquifer in the vicinity of MHAFB and Mountain Home. The formation includes deposits consisting primarily of coarse sands formed by weathered granite. These deposits do not normally exceed 300 feet in thickness. Fine silts, diatomite, sand, and basalts approximately 800 feet in thickness are also within the formation. Well yields from this aquifer range from 10 to 3,500 gallons per minute (gpm). In the fall of 1981, the groundwater level in the portion of the aquifer underlying MHAFB was recorded at an approximate elevation of 2,600 feet MSL (McGranahan, Messenger, Associates 1989). Since surface elevation on the base is approximately 3,000 feet MSL, the groundwater table lies approximately 400 feet below the surface. Groundwater movement is generally south or southwest. Natural groundwater discharge from the plateau is about 18,000 acre-feet annually (Young 1977). Recharge to the aquifer includes water from the Boise River drainage basin, precipitation on the plateau and adjacent mountains, and leakage from irrigation structures.

Groundwater is the sole source of water for the MHAFB water system. The base water system consists of wells, pumping stations, treatment facilities for disinfection and fluoridation, storage, and a distribution system. The existing base water system provides all of the water for MHAFB and provides service only within the base boundaries; there are no other municipal water systems located near the base (McGranahan, Messenger, Associates 1989). The service area includes aircraft operation and maintenance, base housing, recreation facilities, and general base operation and maintenance. Irrigation accounts for approximately 83 percent of on-base water use during peak demand days in the summer. The March 1988 Installation Plan identifies high irrigation usage as a primary cause of water system deficiencies (i.e., low water pressure and flow).

Base water is supplied by seven wells (see Table M3.11-1) developed in the regional basalt aquifer within the Bruneau Formation. Well depths vary from 379 to 610 feet, with capacities from 575 to 1,650 gpm. Water pumped from the wells is stored in a ground-level reservoir prior to treatment and

Table M3.11-1

MOUNTAIN HOME AFB WATER SOURCES

<i>Source</i>	<i>Total Depth (feet)</i>	<i>Capacity (gallons per minute)</i>
Base Domestic Water		
Well No. 1 (new)	450	1,650
Well No. 2	588	758
Well No. 4	379	1,400
Well No. 6	610	575
Well No. 7	---	1,550
TOTAL DOMESTIC CAPACITY		5,933
Base Golf Course Water		
Well No. 3	425	625
Well No. 8	---	800
TOTAL GOLF COURSE CAPACITY		1,425
TOTAL CAPACITY		7,358

Source: McGranahan, Messenger, Associates 1989

distribution. Table M3.11-2 shows water use at the base for the year April 1986 through March 1987. The maximum water use was 7.09 million gallons per day (mgd) and the average use was 2.45 mgd (12-month total divided by 365 days). A schematic diagram of the MHAFB water distribution system is shown in Figure M3.11-1.

All domestic water for the city of Mountain Home is drawn from groundwater supplies. Figure M3.11-2 shows the location of wells in the city of Mountain Home, and Table M3.11-3 provides the pumping capacity of each well. Most water is pumped directly from the wells into the city's water supply system; however, there are two large tanks for water storage. The largest, a 2 million gallon tank, is connected directly to well number 12. A 500,000 gallon tank is located northeast of the city and stores excess water from the distribution system. The city draws most of its water from three wells (numbers 1, 6, and 11). Two additional wells are used primarily in the summer months when demand is higher due to irrigation. Section M3.10.6.4 (Utilities) provides further discussion of water supply and use in the Mountain Home community.

The Idaho Department of Water Resources has designated a portion of the Mountain Home Plateau as a Groundwater Management Area in 1982 (Idaho Code, Section 42-233b). The State of Idaho restricts water rights in a Groundwater Management Area by issuing permits and approving water usage. Within the Mountain Home Groundwater Management Area, Cinder Cone Butte has been designated as a Critical Groundwater Area. Figure M3.11-3 shows the location of these groundwater management areas.

M3.11.4 Water Quality

Surface water quality within the Mountain Home drainage area is generally good, with low salinity and low dissolved solids (Lewis and Stone 1988).

Groundwater quality in the ROI generally reflects the source of recharge and, for the most part, is good. Groundwater in the vicinity of MHAFB and Mountain Home contains low concentrations of dissolved fluoride and sodium and has a neutral pH of 7. Higher concentrations of dissolved solids are found where recharge is from surface-water-irrigated areas. Chemical analysis of groundwater supplies for Mountain Home is provided in Table M3.11-4. Between November 1985 and July 1986, the Air Force drilled a 4,403-foot test hole in the northeastern part of MHAFB to determine the availability of water from geothermal aquifers to supply energy for space heating of military housing and other facilities on the base (Lewis and Stone 1988). While using the thermal water to supply energy to the base was determined to be infeasible (personal communication, Eisman 1989), the well supplied

Table M3.11-2

WATER USE AT MOUNTAIN HOME AIR FORCE BASE
April 1986-March 1987

<i>Month</i>	<i>Total (mg)</i>	<i>Average (mgd)</i>	<i>Maximum (mgd)</i>	<i>Minimum (mgd)</i>
April	44.5	1.48	2.21	0.95
May	104.8	3.38	6.35	0.81
June	142.2	4.74	6.51	2.31
July	169.2	5.46	7.09	3.51
August	166.0	5.36	6.62	4.02
September	80.0	2.63	5.58	1.22
October	37.6	1.21	1.77	0.78
November	29.6	0.99	1.28	0.81
December	29.0	0.94	1.04	0.78
January	30.0	0.97	1.21	0.86
February	27.1	0.97	1.29	0.78
March	32.6	1.05	1.38	0.85
Total water use (12 months)	892.6			
Average daily use		2.45		
Maximum one-day use			7.09	
Current Allotment for MHAFB			11.0	

Source: McGranahan, Messenger, Associates 1989

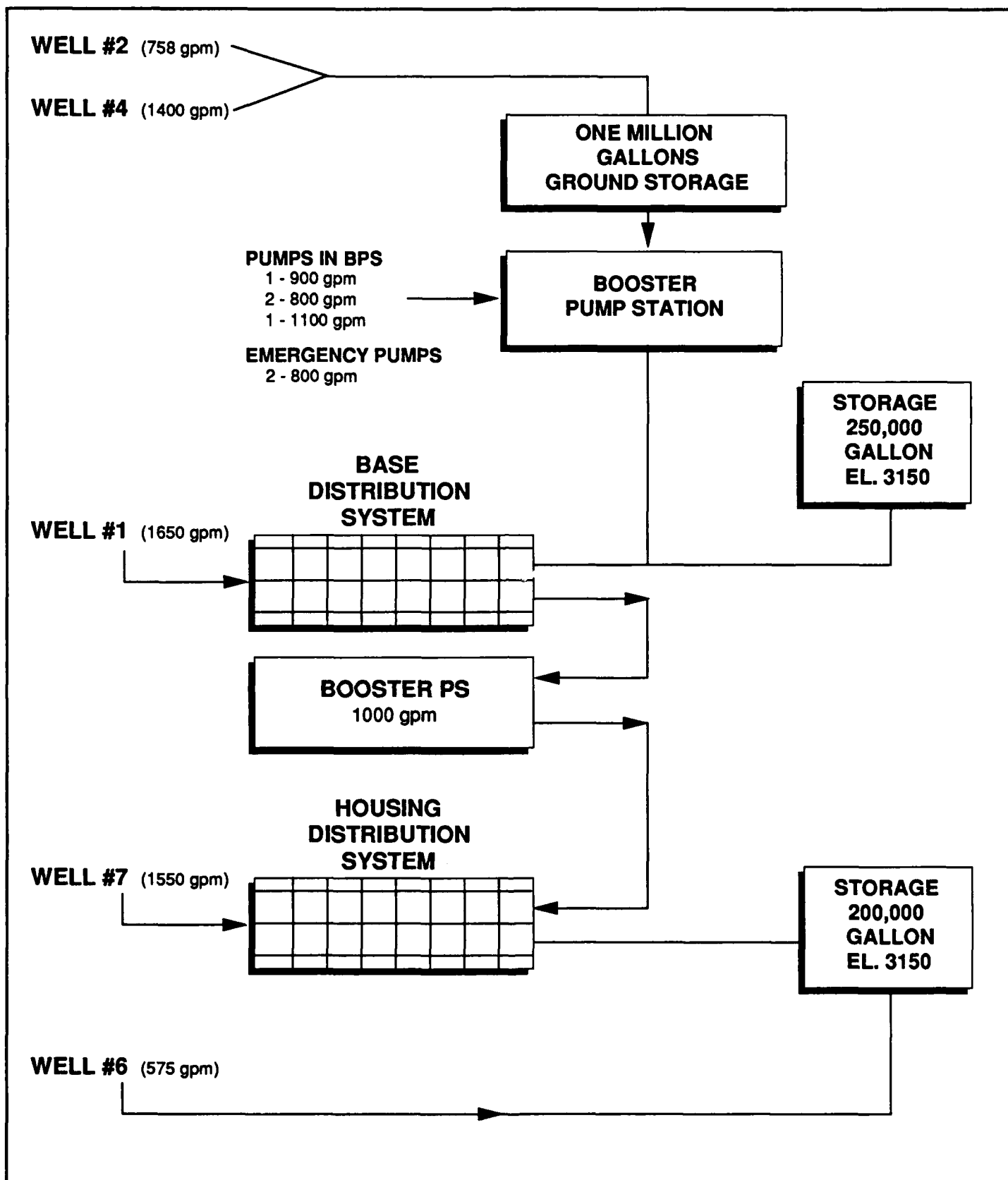


Figure M3.11-1

**WATER SYSTEM SCHEMATIC
 MOUNTAIN HOME AFB**

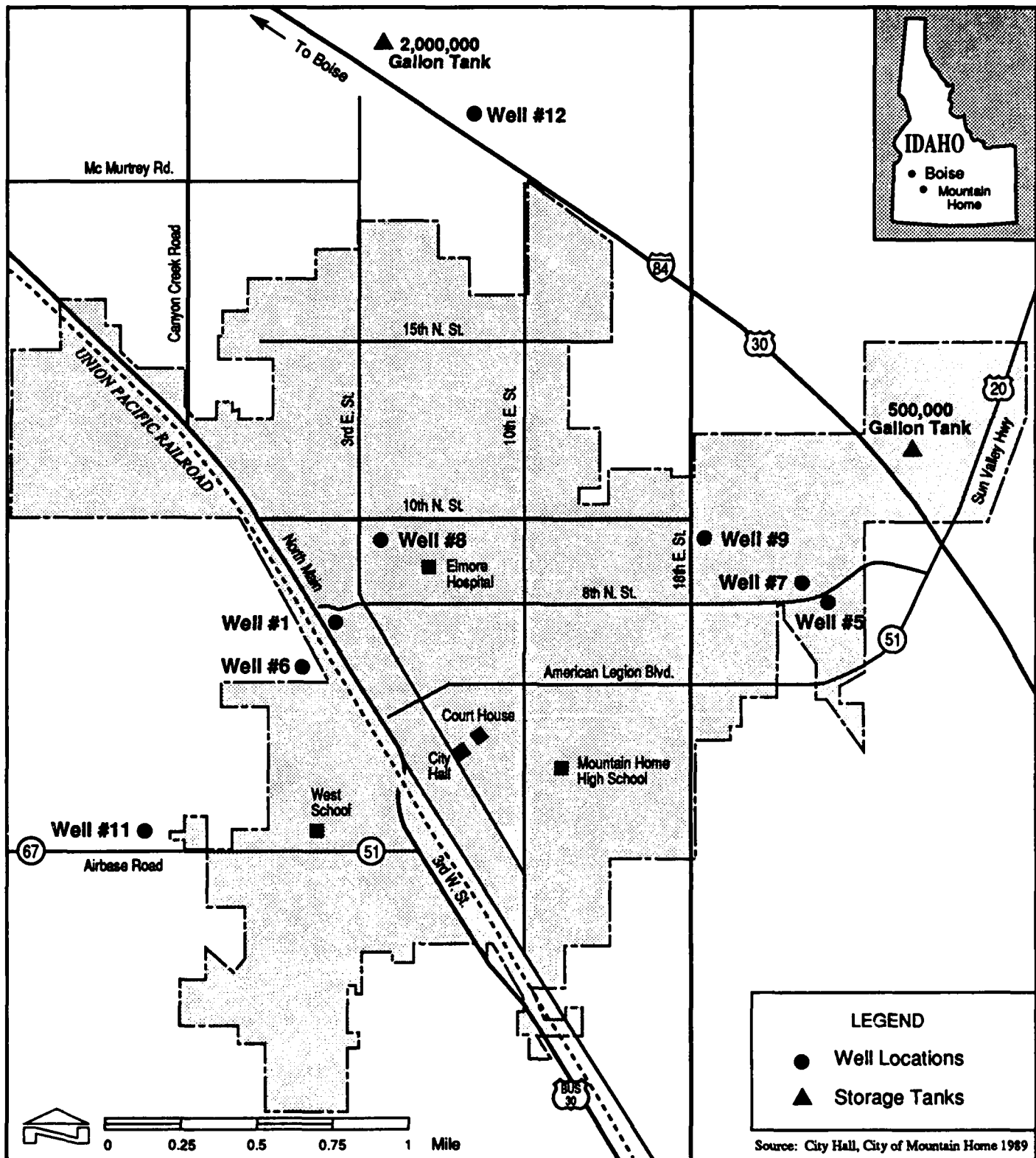


Figure M3.11-2
WATER WELL LOCATIONS IN THE CITY OF MOUNTAIN HOME

Table M3.11-3

CITY OF MOUNTAIN HOME WATER SOURCES

<i>Source</i>	<i>Total Depth (feet)</i>	<i>Capacity (gallons per minute)</i>
Well No. 1	917	750
Well No. 5	455	450 (seasonal)
Well No. 6	940	1,500
Well No. 7	310	200 (seasonal)
Well No. 8	990	450
Well No. 9	600	1,400 (seasonal)
Well No. 11	815	1,850
Well No. 12	585	1,300
TOTAL CAPACITY		7,900

Source: Personal communication, Lago 1989.

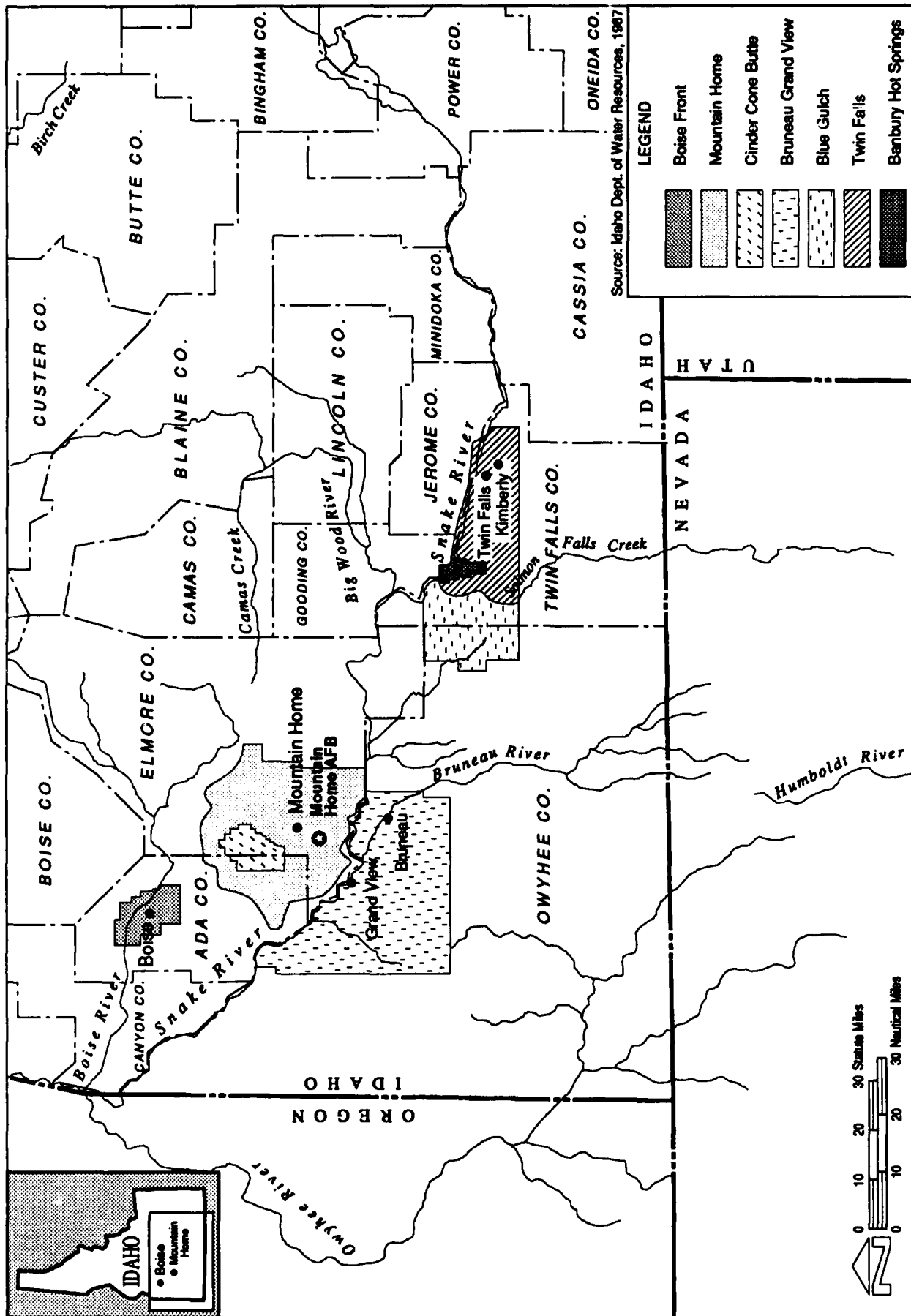


Figure M3.11-3

CRITICAL GROUNDWATER AND GROUNDWATER MANAGEMENT AREAS IN SOUTHERN IDAHO

June 1987

Table M3.11-4

**CHEMICAL ANALYSIS OF SELECTED MUNICIPAL GROUNDWATER SUPPLIES
IN MOUNTAIN HOME, IDAHO**

<i>Constituent</i>	<i>Concentration¹</i>
Dissolved solids	170
Hardness	76.0
Chloride (Cl)	11.0
Sulfate (SO ₄)	10.0
Calcium & Magnesium (Ca & Mg)	25.0
Sodium & Potassium (Na & K)	15.0
Nitrate (NO ₃)	3.2
Iron (Fe)	0.06
Fluoride (F)	0.09

Note: 1. Measured in milligrams per liter (mg/l).

Source: Pettyjohn et al. 1979.

valuable information on the quality of water beneath the base. Chemical analyses of water samples taken from this test hole are shown in Table M3.11-5.

U.S. Environmental Protection Agency (EPA) tests conducted in October 1987 identified elevated levels of bromoform in several on-base wells. Bromoform is a member of the trihalomethane (THM) group. The by-products of water chlorination generally fall into the THM group, and bromoform is a common by-product of well chlorination. The bromoform detected on the base is most likely a product of well chlorination since the chemical was reported only in wells that are part of the base's chlorinated water supply system (Smith 1989).

M3.11.5 Flood Hazards

On-base drainage is not well defined due to the area's generally flat topography. Surface water runoff from thunderstorms and snowmelt collects in low areas (e.g., dips in streets). These areas are not extensive and the water typically evaporates within a few hours (personal communication, Apple 1989). No floodplains have been identified on the base.

The Federal Emergency Management Agency (FEMA) issued a flood insurance study in 1988 for the city of Mountain Home. According to the study, a portion of the city on the west bank of Rattlesnake Creek lies within the creek's 100-year floodplain (see Figure M3.11-4). There is a 1-percent chance that a 100-year flood will occur in any given year.

M3.11.6 Water Rights

A water right is a title or claim to use a portion (or share) of the public waters for a beneficial use. Such uses include diversion for domestic purposes, water for stock, irrigation, municipal and industrial supply, power production, mining, and recreation. Water must be physically diverted by means of pumps, pipelines, dams, or canals before an individual may take possession of the water.

The State of Idaho is currently undergoing a water rights adjudication process for the Snake River Basin. Under this process, all individuals or associations currently using or wanting to use water from the Snake River or its tributaries must file a water rights claim with the State. The purpose for the adjudication is to determine exactly how much Snake River water is currently allotted; where and how the water is being used; and how much remains to be allotted. The adjudication process, which is expected to continue into the 1990s, has little effect on current use of surface water resources within the ROI.

MHAFB and the city of Mountain Home own water rights to tap the area's underlying groundwater supplies. The city of Mountain Home currently owns more shares than it is using (personal

Table M3.11-5

CHEMICAL ANALYSIS OF WATER SAMPLES FROM MHAFFB

<i>Constituent^a</i>	<i>Sample 1^b</i>	<i>Sample 2^c</i>
Date of collection	8/8/1986	8/14/1986
Flow rate (gpm)	<5	35
Specific conductance ($\mu\text{S}/\text{cm}$)	817	565
pH	7.9	9.9
Water temperature ($^{\circ}\text{C}$)	20.0	45.0
Hardness as CaCO_3	17	15
Noncarbonate hardness	0	0
Calcium (Ca)	6.5	6.3
Magnesium (Mg)	0.10	0.09
Sodium (Na)	110	109
Potassium (K)	2.0	2.1
Bicarbonate (HCO_3)	100	0
Carbonate (CO_3)	0	63
Alkalinity as CaCO_3	83	96
Sulfate (SO_4)	45	46
Chloride (Cl)	97	88
Fluoride (F)	1.1	1.0
Silica (SiO_2)	68	58
Dissolved solids (calculated)	380	439
Nitrogen (NO_2 and NO_3)	0.10	0.59
Boron (B) ($\mu\text{g}/\text{l}$)	420	410
Lithium (Li) ($\mu\text{g}/\text{l}$)	5	--
Oxygen - 18	--	-14.6
Deuterium	--	-126

Notes:

a. Chemicals are in milligrams per liter (mg/l), except where noted: gpm = gallons per minute; $\mu\text{S}/\text{cm}$ = microsiemens per centimeter at 25°C ; $\mu\text{g}/\text{l}$ = micrograms per liter. Stable isotope (oxygen-18 and deuterium) compositions are in parts per thousand, expressed in delta units relative to standard mean ocean water.

b. Sample from below 3,462 feet.

b. Sample from below 2,003 feet.

Source:

USGS 88-166.

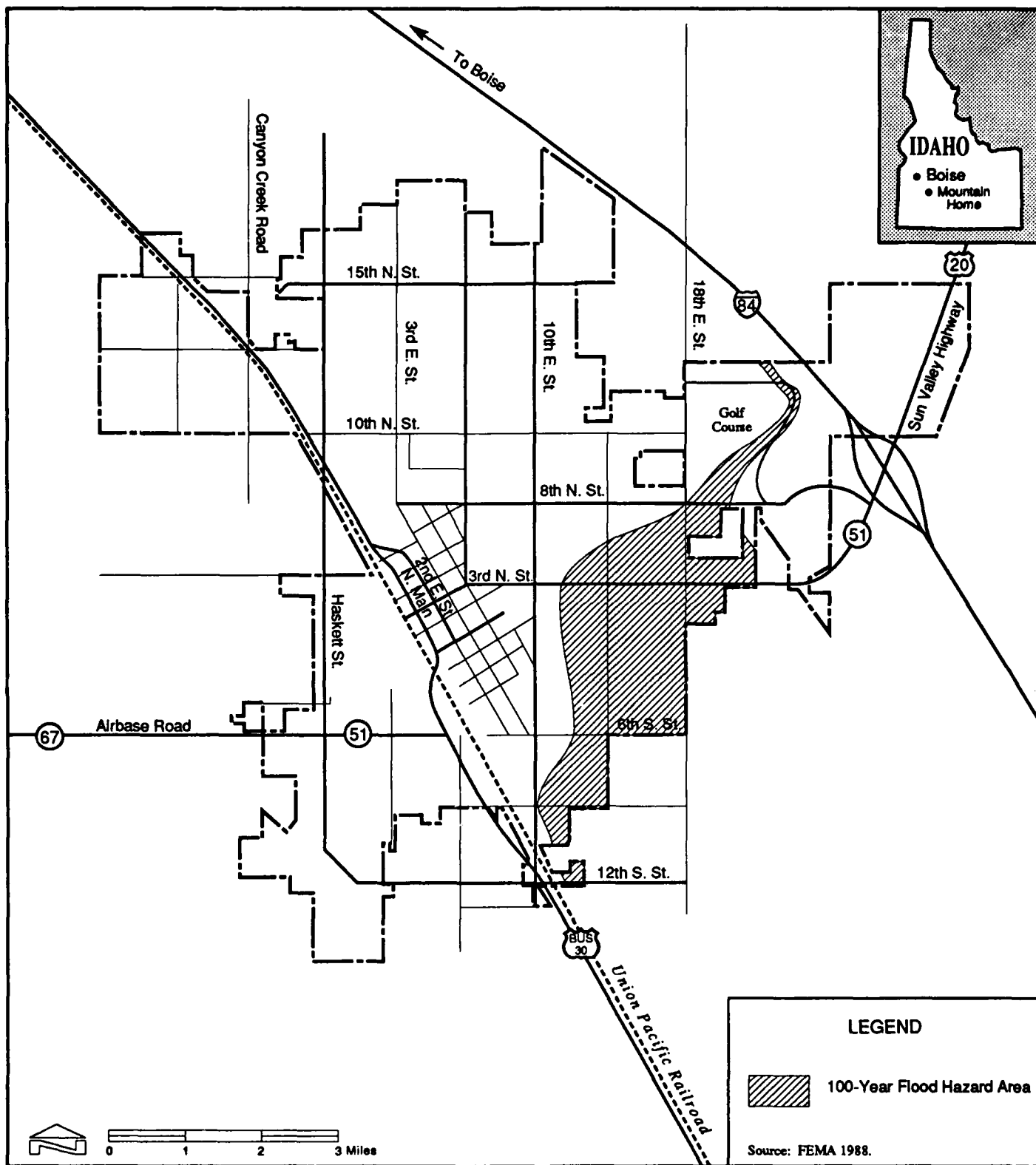


Figure M3.11-4

**FLOOD HAZARD AREA INUNDATED BY 100-YEAR FLOOD
IN THE CITY OF MOUNTAIN HOME**

communication, Raymond 1989). MHAFB is also not currently pumping all the groundwater it has been allotted by the State of Idaho (personal communication, Pachner 1989). The base has plans to develop a new well in order to bring base production up to the current allotment of 17 cubic feet per second (cfs) (approximately 11 mgd). The U.S. Army Corps of Engineers will soon complete a study to determine the most efficient placement of this new well to tie into the current base water distribution system.

M3.12 SAFETY

M3.12.1 Definition

Safety issues affected by the base realignment are flightline fire/crash safety, base structures and housing fire suppression, and hazardous materials, including wastes that are controlled under the Federal Water Pollution Control Act, Solid Waste Disposal Act, Clean Air Act, Toxic Substances Act, or the Resource Conservation Recovery Act including asbestos-containing building materials (ACBM) disturbance during existing structure modification and/or building demolition. Because additional aircraft will be stationed at MHAFB, the frequency of bird aircraft strike hazards will increase and so this issue is also discussed.

M3.12.2 Region of Influence

The ROI comprises the geographical area around MHAFB; the area beneath the local air traffic patterns around, to, and from the base; and the Mountain Home approach and departure paths up to an altitude of 3,000 feet AGL. Also included in the ROI are locations of any waste-generating activities that may be within the base. These activities include maintenance, munitions storage, landfills, and underground storage tanks.

M3.12.3 Flightline Fire/Crash Safety

The Air Force has developed standards that dictate the amount of fire/crash equipment that must be present, based on both the numbers and types of aircraft stationed on base. Table M3.12-1 lists and describes the types of major equipment available for fire/crash response. MHAFB has been designated to require two P-2 trucks, one P-4 truck, and a UWT water re-supply tanker. Instead of a P-4, the base has a P-19 crash truck. In addition, the base also has a P-18 truck, two SCAT trucks, and one emergency truck. MHAFB also houses one additional P-19 truck that is designated as a "floater" and could be shipped to any other Air Force base on request.

The staffing level is dictated by Air Force regulations, the numbers and types of aircraft stationed at the base, and the types and total number of square feet of base structures and housing. As a result, the base currently has 45 individuals split between two 24-hour shifts to man the equipment and 18 staff members to administer and manage the program for both the flightline and the base facilities.

Under new manning standards, an additional four personnel are authorized for the current equipment. These personnel are being requested and will be used to man the two SCAT trucks.

Table M3.12-1

FIREFIGHTING EQUIPMENT DESCRIPTION

<i>Equipment Designation</i>	<i>Equipment Description</i>	CAPACITY IN GALLONS	
		<i>Water</i>	<i>Foam</i>
P-2	Crash pumper truck	2,300	200
P-4	Crash pumper truck	1,500	180
P-8	Structural fire truck	600	55
P-12	Structural fire truck	500	55
P-19	Crash pumper truck	1,000	100
UWT	Water resupply tanker	1,500	--
SCAT Truck	Pick-up truck with dry chemical and Halon ^R installed extinguisher systems mounted in the bed		
Emergency Truck	Panel truck with emergency and rescue medical and first-aid equipment		

Currently there is only one facility that houses the equipment for both the flightline and the base structure fire protection needs. This facility is located at the end of Sixth Street next to the flightline.

M3.12.4 Structure and Housing Fire Protection

Currently one P-8 and one P-12 (see Table M3.12-1) fire trucks are housed at the same central facility as the flightline fire/crash response equipment. The same shift crew responds to either a structure fire or a flightline emergency. The response requirements are listed below. All response times and distances are computed using the shortest practical route.

- o *Structural Response.* Maximum response distance and time to various types of functional areas and guidance for planning fire station requirements are:
 - Operational shops, industrial buildings, technical facilities, hangars, warehouses, and hospitals, within 2 miles or 4.5 minutes.
 - Administrative, exchange, commissary, recreation, assembly, dining halls, UPH, training buildings, and multifamily houses, within 3 miles or 6.0 minutes.
 - Single and duplex family housing and mobile home courts, within 5 miles or 8.5 minutes.
 - Isolated or scattered buildings, single-unit family housing, incidental structures, within 7 miles or 10.0 minutes.
- o *Aircraft Response.* Maximum response time requirements for the first arriving major aircraft firefighting vehicle are:
 - One minute to any incident on the runways or overruns after repositioning for an announced emergency.
 - Three minutes to any incident on the runways or overruns for an unannounced emergency.

Current staffing and equipment levels meet existing flightline and base needs. The positioning of the central facility also meets the current time and distance requirements to the farthest housing areas.

M3.12.5 Hazardous Materials and Hazardous Waste

A variety of activities at MHAFB generate potentially hazardous wastes. These activities include maintenance of aircraft, aircraft corrosion control, and vehicle and ground support equipment maintenance. Other waste-generating activities include grounds maintenance, munitions storage and disposal, medical services, and laboratory operations (including photo development, non-destructive inspection, and fuels analysis). Wastes generated in maintenance activities include spent solvent, waste oils, contaminated fuels, and greases removed from equipment. Waste from corrosion control operations include paint chips, waste paint, spent solvents, and spent strippers. Solvents from maintenance and paint strippers include trichloroethane, methyl ethyl ketone, toluene, PD-680, and a phenolic-based carbon remover. Alkaline soap, detergents, and small amounts of PD-680 waste are generated by aircraft washrack activities (366 CSG/DEEV 1987). The final disposition of these wastes is controlled by the Defense Reutilization and Marketing Office (DRMO).

The hazardous waste storage permit allows storage of hazardous wastes in the hazardous waste storage facility for up to one year. Hazardous wastes at MHAFB are allowed to be stored more than 90 days at the hazardous waste storage facility located in building no. 1822. Hazardous wastes are temporarily (less than 90 days) stored in designated accumulation points within shops and hangars in which they are generated. Waste may also be accumulated at satellite accumulation points. Up to 55 gallons of hazardous waste or 1 quart of acutely hazardous waste may be accumulated in containers that must then be transferred to a designated treatment, storage, or disposal facility within 72 hours (Entech 1989).

Table M3.12-2 identifies the locations where hazardous materials are currently used and/or stored on MHAFB. Accumulation points are designated for use by each operation in which an appreciable quantity of hazardous waste is generated. Satellite accumulation points are identified for use by individual shops, maintenance areas, photo labs, and others that generate waste at slow rates and low volume. The wastes generated at these points are not classified as hazardous (Entech 1989).

Herbicides are used to control plant growth adjacent to the runways and on vacant lots. Pesticides are used for insect control in base shops and buildings and rodent control at the base golf course. Pesticides have been stored at locations occupied by the Entomology Shop (366 CSG/DEEV 1987). The DRMO operates a permitted hazardous waste storage facility at MHAFB (Entech 1989). The facility is located in building no. 1322. All of the waste stored at the facility is disposed of according to requirements contained in the Resource Conservation and Recovery Act of 1976 (RCRA).

Activities at MHAFB generate waste associated with handling, storing, and using explosive ordnance. The munitions range from handgun ammunition to practice bombs. The training of personnel produces munitions residue in the form of spent shell casings, cannisters, and non-recyclable practice

Table M3.12-2

LOCATIONS OF HAZARDOUS MATERIALS AT MOUNTAIN HOME AIR FORCE BASE

<i>Building</i>	<i>Description</i>
20B	Transp - Logair
204/205	389th Aircraft Maintenance Unit (yellow)
208	Equipment Maintenance Squadron - Wheel & Tire
211	391st Aircraft Maintenance Unit (blue)
261	Base Fire Department
358	392nd Electronic Component Repair Squadron
358	Aircraft Generation Squadron
1100	Vehicle Maintenance
1125	Refuel Maintenance
1222	Non-Destructive Inspection
1224	Component Repair Squadron - Electrical
1224	Metal Fabrication
1224	Structural Repair
1224	Equipment Maintenance Squadron - Machine Shop
1224	Pneudraulic Shop
1224	Component Repair Squadron - Environ
1224	Aircraft Maintenance Unit (red)
1225	Component Repair Squadron Propulsion Shop
1300	Civil Engineering Squadron - Paint Shop
1322	Defense Revitalization and Marketing Office - Treatment, Storage, Disposal Hazardous Waste
1325	Supply - Storage
1332	Corrosion Control
1333	Base Photo Lab
1333	Police - Fuel
1333	Component Repair Squadron
1335	Fuel System Maintenance
1337	Civil Engineering Squadron - Entomology
1340	390th Mun Trl Maintenance
1351	Civil Engineering Squadron - Power Production
1352	Supply O3 Warehouse
1354	Civil Engineering Squadron Roads & Pavements
1359	Aerospace Ground Equipment
1403	Civil Engineering Squadron - Water Department
1804	Civil Engineering Squadron - Grounds
2209	Auto Hobby Shop

Source: 366 CSG/DEEV 1987.

ammunition (smoke bomb containers). There are two explosive ordnance (EOD) areas on MHAFB and a third EOD area adjacent to the base associated with the small arms range. The EOD training and proficiency range is operated in conjunction with the small arms range. Activities at this area produce munitions residue which are buried in accordance with federal and state requirements.

There are 177 identified underground storage tanks (USTs) located on MHAFB. These USTs are operated under MHAFB's Underground Storage Tank Management Plan of 1989. This plan was prepared within the scope of the Resource Conservation and Recovery Act as amended in 1984.

MHAFB is participating in the Installation Restoration Program (IRP). Under this program, established in 1978, the DOD seeks to identify, investigate, and clean up contamination from hazardous materials. Under IRP, the Air Force has investigated numerous potentially contaminated areas (CH₂M Hill 1983). Based on these initial investigations, the Air Force ranked the potential sites in regard to their potential contamination. These sites included two abandoned landfills, a waste oil disposal area, four abandoned fire-training areas, one active fire-training area, and the entomology shop yard where pesticides were rinsed from application equipment. Subsequent investigations identified five sites that warranted further study and monitoring (see Figure M3.12-1). These sites are included in a DOD system that will rank all the IRP sites according to their priority for cleanup.

The lagoon landfill (MHAFB Site No. 1 and LF1) is located on the western edge of the base at the site of the current wastewater lagoons. Between 1952 and 1956 this site formed the primary sanitary landfill for the base. The wastewater lagoons were constructed in 1961 and 1962. In addition to general refuse, which was burned, the landfill received about six drums per month of mineral oils, hydraulic fluids, engine oils, and solvents including trichloroethylene and carbon tetrachloride (Dames & Moore 1986). The landfill was designated an IRP site due to the possibility that infiltration from the wastewater lagoons had caused hazardous contaminants to leach from the underlying landfill.

The "B" Street landfill (MHAFB Site No. 2 and LF2), located in the northwest corner of the base, was the primary sanitary landfill for MHAFB between 1956 and 1969. The landfill received garbage, concrete, rubble, fill, empty drums, and trees. It also received industrial wastes such as waste oils, fly ash from the heat plant, solvents, jet fuel, tank-cleaning sludge, and possibly up to 20 drums of DDT (Dames & Moore 1986). Refuse and wastes were deposited in trenches then either burned or buried. Dirt fill, concrete, rubble, empty drums, and refuse currently cover the site (Dames & Moore 1986). The suspected presence of hazardous wastes prompted designation of the landfill as an IRP site.

The Fire Department Training Area (MHAFB Site No. 8 and FT8), located near the southeast end of the flight line, has been in use since 1962. The site includes two buildings and a burn area containing a steel aircraft skeleton. Waste fuel, oils, and lubricants were burned for training exercises before 1975, but only jet fuel has been used since then (Dames & Moore 1986). Although the fires consumed

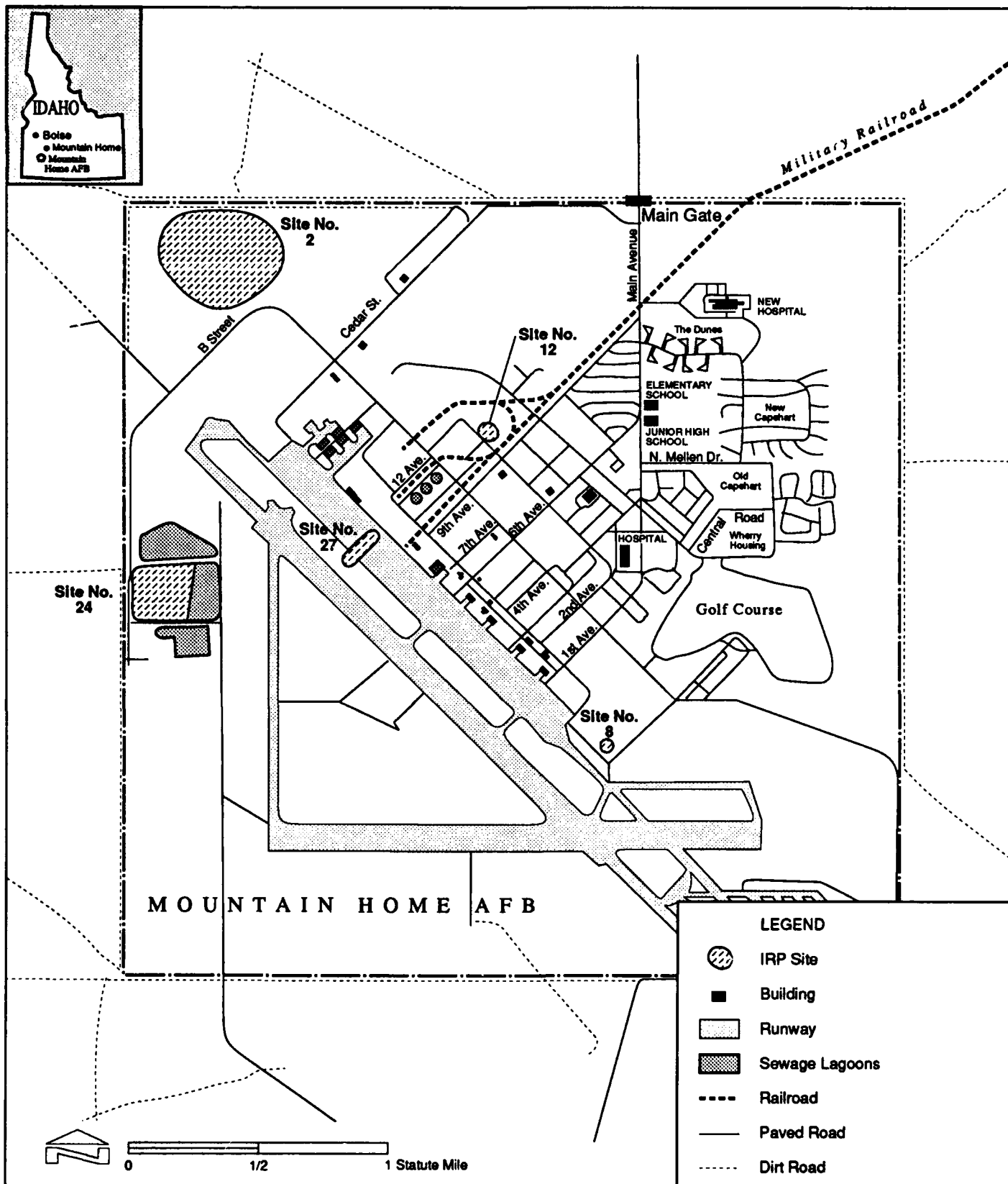


Figure M3.12-1

**INSTALLATION RESTORATION PROGRAM SITES FOR
MOUNTAIN HOME AIR FORCE BASE**

most of the jet fuel, the Fire Department Training Area was designated an IRP site based on the portion of fuel remaining in the soil.

The Fuel Hydrant System Leak/Spill Area (MHAFB Site No. 11 and SS11) is on the flight line between two jet fuel hydrant stations. Two events in the late 1950s resulted in the spillage of almost 64,000 gallons of jet fuel at MHAFB Site No. 11 (Dames & Moore 1986). Because fuel may still remain below the ground surface, this site received IRP designation.

The Entomology Shop Yard (MHAFB Site No. 12 and SD12) is located northwest of and adjacent to the Entomology Shop (Building No. 2206). From the late 1960s to about 1982, wash water from cleaning pesticide application equipment drained outside the building on the ground surface (Dames & Moore 1986). Currently, the wash water is collected in an underground tank and analyzed before disposal. The presence of low concentrations of several pesticides, including DDT in past soil samples from this site, result in its designation as an IRP site.

EPA tests conducted in October 1987 found elevated levels of tribromomethane (bromoform) in several on-site wells serving the base. Bromoform is a component of fire extinguishing agents and is also used as a solvent. MHAFB received a proposed National Priorities List (NPL) ranking from the EPA in July 1989. The justification for the proposed ranking of MHAFB is the presence of bromoform in base wells (personal communication, Capt. M. H. Smith 1989). The Air Force is developing a workplan for a remedial investigation/feasibility study to determine the type and extent of contamination at the base and identify alternatives for remedial action.

Dates of building construction at MHAFB range from the early 1940s to the late 1980s. The majority of structure construction occurred in the 50s and 60s, the prime period when asbestos was in heavy use in various building materials. In the past, random asbestos assessments at MHAFB have been performed on various building materials and piping insulation that were being removed. Assessment of records and follow-up actions are spotty and not centralized. A comprehensive survey of asbestos-containing building materials (ACBM) in all base structures has not been done.

The Air Force Asbestos Guidance for Rating and Assessing Damage and Exposure (GRADE) System has been developed to provide an assessment methodology and a prioritizing scheme of action for ACBM. The GRADE system provides a framework to record asbestos assessments made within each base structure. It also provides a ranking system based on the condition of the material, the percent of asbestos content, the accessibility of the material to contact or damage, and the use of the structure (i.e., nursery, hospital, home, etc.). Based on the ranking, the ACBM will be immediately removed, removed when practical, removed as part of a structural modification, or maintained and monitored until building demolition.

Following the requirements found in the Occupational Health and Safety Act (OSHA) regulation 29 CFR 1926.58, all base personnel who handle or remove ACBM are trained. The base has also developed an asbestos management plan detailing the various personnel responsible for the management of the program, the method for evaluating the asbestos found (GRADE system), how the known ACBM is managed, and program training requirements. Additionally, MHAFB has secured an asbestos disposal permit for sections of the site landfill.

The asbestos assessments of all base structures has not begun. The assessments will be conducted regardless of the MHAFB realignment process.

MHAFB contains no areas contaminated with polychlorinated biphenols (PCBs). All PCB contaminated areas have been identified and cleaned-up in accordance with federal laws.

M3.12.6 Bird-Aircraft Strike Hazard

All installations with a flying mission are required to have a Bird-Aircraft Strike Hazard (BASH) plan. The 366 TFW plan establishes an overall bird control program for MHAFB and is designed to minimize aircraft exposure to potentially hazardous bird strikes. This plan is designed to:

- o Establish a BASH Working Group.
- o Decrease the attractiveness of the airfield to birds by controlling environmental factors that support birds.
- o Specify aircraft and airfield operating procedures to avoid high hazard situations.
- o Establish procedures to identify and to communicate high hazard situations to aircrews and supervisors to determine if altering/discontinuing flying operations is required.
- o Provide for dissemination of information to all assigned aircrews and transient aircrews on specific bird hazards and procedures for avoidance.

The plan is reviewed each year and updated as appropriate. The BASH Working Group reviews data on bird strikes, identifies and initiates actions to reduce hazards, reviews and implements changes in operational procedures, and prepares informational programs for aircrews.

M3.12.6.1 Specific Bird Hazards and Habitat Reduction

Birds around the MHAFB area include American robin, house finch, vesper sparrow, sage sparrow, savannah sparrow, horned lark, common starling, western meadowlark, killdeer, northern harrier, short-eared owl, ring-necked pheasant, bank swallow, ring necked duck, ruddy duck, greater scaup, lesser scaup, mallard, American coot, goldeneye, bufflehead, blue-wing teal, American wigeon, cinnamon teal, prairie falcon, red-tailed hawk, and golden eagle. The Snake River, south of the base and along the flight path to MHAFB, provides a breeding, migration, and wintering area for waterfowl.

In many cases habitat reduction is not feasible or desirable. The primary method for minimizing the hazard is increased awareness by aircrews and runway supervisory personnel. Runway environments are monitored for bird activity and appropriate advisories transmitted, as required.

However, there is a direct tie between predator and prey populations that indicates that controlling small mammals in the target areas would pay direct benefits in reducing the hazard. There are several procedures in the 366 TFW BASH Plan that outline steps to control the population of small mammals that are prey to raptors. Also, perching sites of raptors are discouraged. Posts, telephone and power poles, navigation equipment buildings near the runway, runway markers, and weather measuring equipment are checked for evidence of bird use. Birds of prey often use these vertical structures to perch and to search for food, because these perches provide an unrestricted view of the birds' hunting territory. Anti-perching devices are installed where bird droppings are found. Live-trapping raptors can yield short-term population control benefits when immediate control is necessary. Trapping is only used if small mammal control is ineffective and if a large number of raptors are attracted to the airfield. Raptor trapping must be coordinated with the USFWS.

Waterfowl are attracted to the base sewage treatment facility at the northwest end of the airfield and are likely to be present in varying numbers throughout the year. The treatment system contains a series of four ponds, plus two smaller infiltration ponds. Waterfowl have been observed on these ponds during both day and night. Ducks often remain on the pond all day, with more ducks arriving in the evening. During hours of darkness, birds leave the ponds and depart toward the south. The waterfowl usually remain on the ponds during F-111 operations and create a hazard only when they fly in and out of the ponds. While no duck strikes have been reported for F-111 flight operations, an ANG RF-4 struck a flock of ducks in December 1977 and ruptured the aircraft canopy. Steps are taken to discourage waterfowl use of the sewage ponds.

The Air Force's BASH team has developed a bird avoidance model (BAM) to predict the risk of hitting waterfowl and certain raptors, such as turkey vultures and broad-winged hawks. The BAM model is based on 40 years of waterfowl migration and wintering area data. The data include migration times, concentration densities, and movements of populations throughout North America. The model includes both waterfowl and some raptors, but does not currently include all species that could be

encountered by aircraft. The BASH team is in the process of incorporating other types of birds into the model.

BAM graphs predict the bird strike potential with respect to time of day and month of the year. The graphs show the predicted number of bird strikes (primarily waterfowl) per 1,000,000 NM of flight. The BAM graph for MHAFFB in Figure M3.12-2 shows a relatively low number of predicted bird strikes. The graph is quite flat with less than 5 predicted bird strikes per 1,000,000 NM of flight.

M3.12.6.2 Bird Hazard Warning and Reporting System

The following terminology is used for rapid communications to disseminate bird activity and implement unit operational procedures:

- o *Birdwatch condition RED:* Heavy concentrations of birds above and immediately in the vicinity of the runway posing an immediate hazard to safe flying operations. All areas declared RED are opened only by specific pilot request after being advised of the condition.
- o *Birdwatch condition YELLOW:* Concentrations of birds observed or predictable in locations that represent a probable hazard to safe flying operations. Declaration of condition YELLOW requires increased vigilance by all agencies and extreme caution by aircrews.
- o *Birdwatch Condition GREEN:* Normal bird activity in the area. Upon extended normal bird activity, no birdwatch condition need be declared.

All operations personnel are required to be alert for bird activity, which is reported immediately. During periods of 366 TFW flight operations, the reported birdwatch condition other than GREEN at MHAFFB are included on the hourly automatic terminal information service (ATIS) information. When the supervisor of flying (SOF) declares a Birdwatch Condition YELLOW or RED, the tower personnel, the 366 TFW Command Post, 366 TFW Safety, Base Operations, the three flying squadrons, and the detachments are notified. Birdwatch information is posted in the Flight Planning Room for transient aircrew personnel. The base weather station changes the display for closed circuit TV viewing, and notifies all stations of the change in condition. The primary means of transmitting birdwatch conditions is via ATIS and the weather monitor. However, under Birdwatch Condition RED, the Mountain Home Air Traffic Control Agency ensures that pilots understand the condition and are provided the option to delay, divert, or continue the proposed operation into the hazardous area.

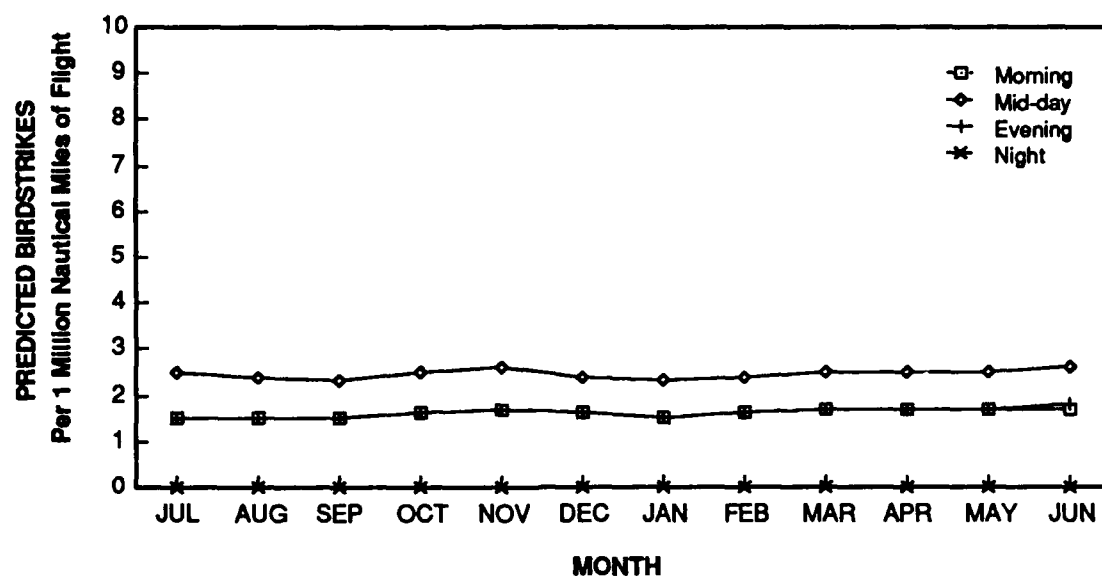


Figure M3.12-2

BIRD AVOIDANCE MODEL FOR MOUNTAIN HOME AFB

Additional direction to all pilots is provided below based upon the color-coded BASH condition and the location identified:

- o *Condition RED:* Only full stop landings are permitted. The SOF will consider changing runways, delaying take-offs and landings, and diverting aircraft.
- o *Condition YELLOW:* Pilots are directed to be particularly cognizant of bird activity.
- o *Condition GREEN:* Used to downgrade from condition RED or YELLOW.

In the event of a bird strike, all personnel identifying the bird strike notify Wing Safety as soon as possible. In many cases, the bird strike is not discovered until post-flight inspection, when feathers or a dent are discovered. Evidence is preserved for identification of the bird species involved in the strike. The aircrew involved in the strike briefs Wing Safety, providing as much information as possible concerning circumstances of the incident.

Table M3.12-3 shows the number of bird strikes reported to the BASH Team at HQ USAF/LEEVE for MHAFB. Although the numbers vary due to factors such as level of operations, reporting accuracy, etc., a typical Air Force base has 30 bird strikes per year (personal communication, R. Dogan 1989). MHAFB has had fewer than 30 reported bird strikes in the last nine years. Very few bird strikes have resulted in any damage. The increasing number of reported bird strikes is partly due to increased reporting requirements and greater awareness of the importance of reporting bird strikes.

M3.12.7 Mishap Potential

Mishaps are measured on the basis of number of incidents per 100,000 flying hours. A mishap is categorized as either Class A or Class B. Class A mishaps involve a fatality or damage to an aircraft in excess of \$1 million. Class B mishaps are those incidents where damage to the involved aircraft is \$200,000 to \$1 million, with no loss of life. Mishap data for EF-111A and F-111A aircraft were obtained from the Air Force Inspection and Safety Center database, Norton AFB, California. During the period from 1975 to 1986, F-111 aircraft were involved in no Class A mishaps and two Class B mishaps in approximately 83,000 hours of flight time. During the period between 1986 and 1989, there were four Class A mishaps involving either F-111A or EF-111A aircraft in the vicinity of the MHAFB terminal area.

The threats to human safety from aircraft accidents at MHAFB are summarized in the Air Installation Compatible Use Zone (AICUZ) Report for MHAFB, dated July 1982 (USAF 1982). The purposes of this AICUZ Report were to evaluate the effects of aircraft noise and accident potential, and to develop

Table M3.12-3

BIRD STRIKE DATA FOR MOUNTAIN HOME AFB FLIGHT OPERATIONS

<i>Date</i>	<i>Aircraft</i>	<i>Location of Impact on Aircraft</i>	<i>Bird Type</i>
01/08/80	F-111	Fuselage	Bird
02/28/80	F-111	Nose gear	H. Lark
07/21/81	F-111	Pnts, C,D	Lg. Bird
01/05/82	F-111	Ingestion	Bird
06/25/82	EF-111	Engine Intake	Bird
08/12/82	F-111	Slat	Bird
03/16/83	F-111	Radome	Gull
03/17/83	F-111	Radome	Gull
08/01/83	F-111	Left Slat	Bird
11/18/83	EF-111	Flap	H. Lark
03/02/84	F-111	Radome	Bird
05/08/84	EF-111	Fuselage	Bird
05/16/84	F-111	Pnts, D,J	Hawk
07/03/84	EF-111	Pvt Pylon	Hawk
10/03/84	F-111	Fuselage	Bird
10/15/84	EF-111	Left Engine	Bird
11/01/84	EF-111	Multiple	Sm. Bird
12/13/84	EF-111	Left Flap	Bird
03/06/85	C-141	Wing	Bird
05/21/85	EF-111	Right Flap	Duck
05/22/85	EF-111	Lead Slat	Sm. Bird
05/23/85	F-111	#2 Engine	H. Lark
07/15/85	EF-111	Left Flap	Sm. Bird
07/23/85	EF-111	Nose	Bird
09/05/85	F-111	Canopy	Bird
09/19/85	F-111	Nose Well	Bird
10/02/85	EF-111	#1 Engine	Sm. Bird
11/07/85	F-111	#2 Engine	H. Lark
05/23/86	EF-111	Left Flap	Bird
06/10/86	KC-135	#4 Cowl	Bird
06/19/86	F-111	Windscreen	Bird
09/25/86	F-111	Radome	H. Lark
12/29/86	C-130	#4 Engine	Duck
12/29/86	F-111	Right Slat	Bird
12/29/86	F-111	Right Slat	Duck
08/27/87	F-4	Wing	Bird
08/27/87	F-4	Left Wing	Bird
10/27/87	EF-111	Left Wing	Bird
06/06/88	A-6	Nose, Engine	Lg. Bird
07/07/88	F-111	Belly	---
07/19/88	F-111	Canopy	---
08/03/88	F-111	Left Canopy	---
08/16/88	F-111	Right Upp	---
08/18/88	F-111	Left #2 N	---
09/03/88	EF-111	Under Radome	---
10/18/88	F-111	Left #2 S	---
10/25/88	F-111	Top of Canopy	---
10/28/88	F-111	Upper Par	---

and establish a means to ensure the health, safety, and welfare of the citizens of the surrounding communities while protecting the operational capabilities of MHAFB.

The AICUZ Report discusses accident potential in terms of where most accidents have occurred in the past at many Air Force bases. As a result of those findings, three accident potential zones are established for the MHAFB runway that define acceptable land-use guidelines intended to protect human health. The Air Force studies indicate that the location with the highest potential for aircraft accidents is along the extended centerline of a runway (see Figure M3.12-3). The potential decreases with distance from the end of the runway. Therefore, a Clear Zone (CZ), an Accident Potential Zone (APZ) I, and an APZ II have been defined for the extended centerline, in both directions, of MHAFB runway.

At both ends of MHAFB runways an expanded Clear Zone and two APZs have been designated. Within the Clear Zone area, the overall risk is so high that the necessary land-use restrictions would prohibit reasonable economic use of the land. The Air Force received Congressional authorization and appropriation to acquire the necessary real property interests in this area to prevent incompatible land uses. Because the MHAFB Clear Zone areas are now owned by the DOD, acquisition actions are no longer required.

APZ I is less critical than the Clear Zone, but still possesses a significant risk factor. This 3,000-by-5,000-foot area has recommended land-use compatibility guidelines that are sufficiently flexible to allow reasonable economic use of the land. APZ II, which is 3,000 by 7,000 feet, and extends 15,000 feet from the runway, also has some risks associated with it, though less than APZ I. Additionally, about 25 percent of the accidents occur outside the Clear Zone and APZs. While the Air Force does not specifically address accident potential outside these areas, it should be recognized that accidents can occur (USAF 1982).

Elmore County has enacted the Airport Hazards Zoning Ordinance that addresses zoning for all airports within Elmore County. The Elmore County Comprehensive Plan designates an area known as the "Air Base Area" which serves as a "... protective area around MHAFB for the safety and health of individuals, and to ensure that encroachment ..." does not occur (see Figure M3.12-3). Generally, the maximum allowable development near MHAFB is agricultural with one dwelling unit per 320 acres or commercial uses along Airbase Road. This zoning ordinance is consistent with the recommendations contained in the MHAFB AICUZ Report.

Current military aircraft operations centered around MHAFB are separated by several miles from civil aircraft operations at Mountain Home Municipal Airport. Air Force mishap data reviewed for this study do not indicate any current conflicts between civil and military aircraft in the Mountain Home terminal environment. All aircraft operating within 5 statute miles and 3,000 feet AGL of MHAFB are

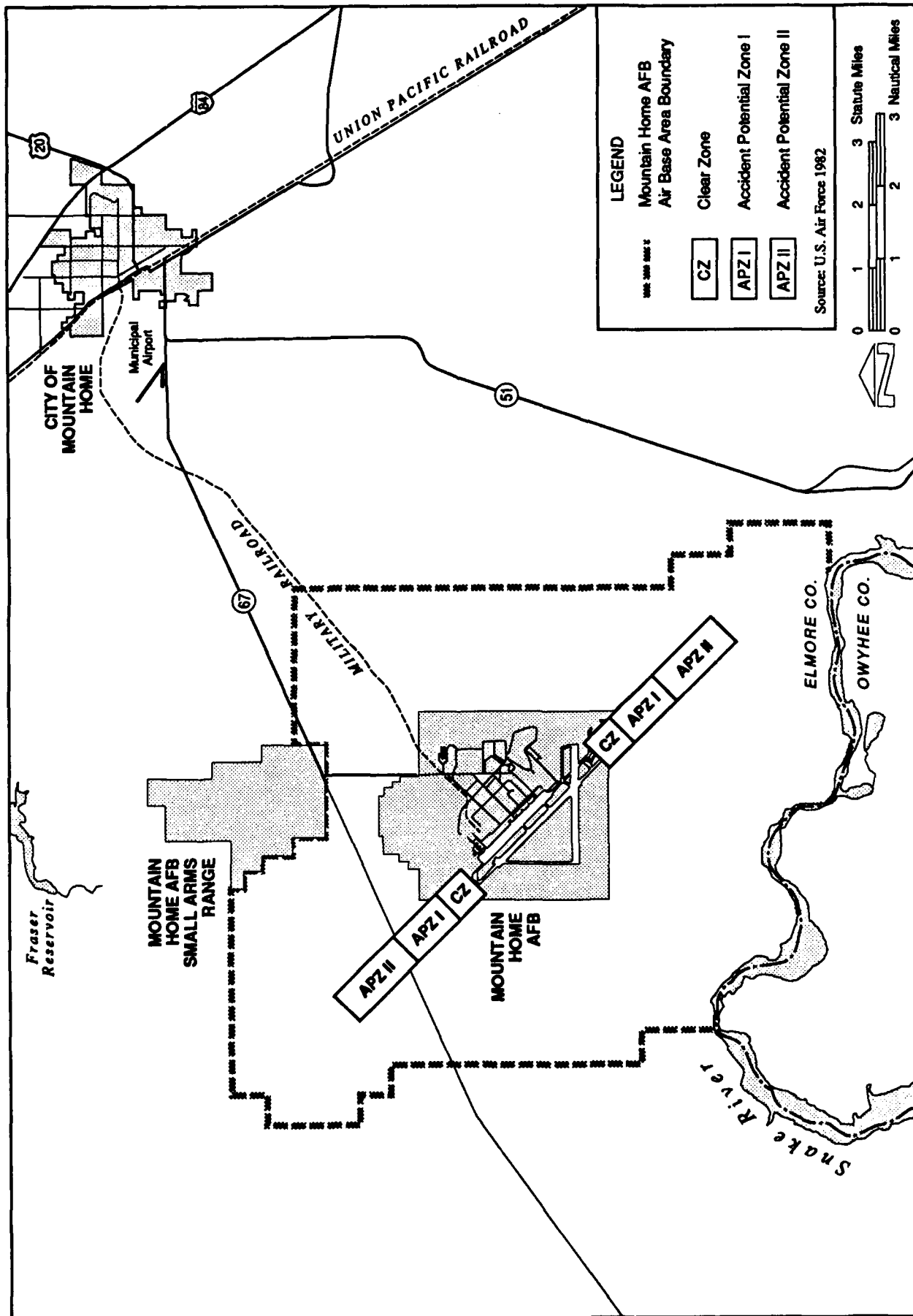


Figure M3.12-3
MHAFB ACCIDENT POTENTIAL ZONES

required to be in radio contact and control of the MHAFB control tower. The current ATC procedures limit the potential for near-misses and mid-air collisions.

**M4.0 ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES:
MOUNTAIN HOME AIR FORCE BASE REALIGNMENT**

M4.1 AIRSPACE MANAGEMENT

M4.1.1 Regulatory Setting

The laws and regulations that govern the management of the National Airspace System are listed below, along with a brief discussion of the primary purpose:

Federal Aviation Act of 1958 created the Federal Aviation Administration and charged the FAA Administrator with ensuring the safety of aircraft and the efficient utilization of the National Airspace System, within the jurisdiction of the United States.

Federal Aviation Regulation Part 71 delineates the designation of federal airways, area low routes, controlled airspace, and navigational reporting points.

Federal Aviation Regulation Part 73 defines special use airspace and prescribes the requirements for the use of that airspace.

Federal Aviation Regulation Part 91 describes the rules governing the operation of aircraft within the United States.

FAA Handbook 7400.2C prescribes policy, criteria, and procedures applicable to rulemaking and non-rulemaking actions associated with airspace allocation and utilization, obstruction evaluation and marking, airport airspace analyses, and the establishment of air navigation aids.

FAA Handbook 7110.65 prescribes air traffic control procedures and phraseology for use by personnel providing air traffic control services in the United States.

Salt Lake City Center and Mountain Home AFB RAPCON Letter of Agreement delegates areas of control jurisdiction and established procedures for coordinating air traffic between Salt Lake City Center and MHAFB RAPCON.

M4.1.2 Issues and Concerns

Issues and concerns pertaining to airspace management resulting from the realignment include:

- o The effect the net increase of 59 aircraft at MHAFB would have on the regional airspace.
- o The effect the increased airport operations at MHAFB would have on the Mountain Home terminal area.
- o The effect on en route civil ATC-users with increased military operations to and from MHAFB.
- o The effect of the realignment on the neighboring public- and private-use airports.

M4.1.3 Significance Criteria

The significance of potential airspace impacts is predicated upon the extent to which the realignment affects the navigable airspace in the terminal and en route airspace environments. Significant impacts occur when an action significantly increases the potential for an aircraft accident, precludes simultaneous aircraft operations in the affected area, severely restricts or limits access to the affected areas by all airspace users, interferes with aircraft operators' capability to comply with federal and military air regulations and rules of flight, or constrains air commerce opportunities.

M4.1.4 Methodology for Analyzing Impacts

Airspace impacts were assessed by comparing the projected military activity with the existing and forecast civil aviation activity to determine if aircraft operations could be accommodated in the terminal and en route airspace areas. Forecast aircraft activity data were obtained from the military and from the State of Idaho's Aviation System Plan. Proposed changes to the military and defense-related airspace areas were compared with existing airspace conditions to determine if conflicts would occur that would preclude simultaneous aircraft operations or that would limit access to all airspace users. Criteria used by the FAA for handling airspace matters were applied to the planned actions to determine if the actions will affect airspace utilization or airport arrival and departure procedures. FAA airport traffic pattern guidelines were used to determine if the realignment resulted in any potential incompatibilities with VFR aircraft operations at civil public and private airports. Analyses were performed to determine if the planned actions would diminish aircraft operators' capability to see and avoid each other or to comply with aircraft right-of-way rules. General assessments were made to determine if the realignment could be accommodated by existing air traffic control (ATC) procedures or if significant changes in the ATC system would be needed.

M4.1.5 Impact Assessment

The realignment will result in a net increase of 59 aircraft based at MHAFB. This will result in an increase in the number of based aircraft movements at MHAFB. Two key factors would drive the growth in these based aircraft operations. The first would be the increased number of aircraft. The second factor would be the higher utilization rate of the F-4s that results from the nature of their assigned training missions and combat roles. This higher utilization rate would further increase the number of based aircraft operations at the base.

The growth of transient aircraft training activity at the SCR would generate more aircraft operations at MHAFB, through the additional transient aircraft services that would be required. The base realignment actions would substantially increase the number of military aircraft that will occupy the airspace in the MHAFB terminal area.

The configuration of the controlled airspace is not predicated on the number of aircraft operations. Therefore, the increased military flight activity at MHAFB would not affect the controlled airspace structure. Because jet aircraft would continue to be the primary users of MHAFB, there should be no change in the criteria by which the existing controlled airspace was established. Thus the realignment of military aircraft should not require a change to the controlled airspace structure. (Any change in the current airspace use by military aircraft would have to be examined with respect to any projected or forecast change in civil aircraft activity near MHAFB.) Potential civil aviation growth trends in the region in which MHAFB is located were identified from aviation forecast data contained in the *Idaho Aviation System Plan* (State of Idaho 1988). The plan addresses existing aviation activity, forecasts of aviation demand, airport system requirements, and recommended airport development for public-use airports that are identified for inclusion in the statewide airport system. The aviation system plan does not address private-use airports.

The forecast of civil aviation demand described in section M3.1 shows that the major growth in aircraft operations in the region will occur in the Boise terminal area airspace northwest of MHAFB. No conflicts would occur between the increased civil aircraft activity at Boise and the increased military aircraft operations at MHAFB. Information provided by the FAA at Boise Approach Control indicates that the preponderance of IFR aircraft that fly to and from the Boise area do so along the en route airway system. The airway system does not interface with MHAFB air traffic. Additionally, most off-airway IFR air traffic that occurs south of Boise typically operates at flight levels above 18,000 feet MSL. This air traffic is above the MHAFB terminal area operations.

With respect to off-airway VFR air traffic flying between Boise and the Mountain Home area, growth in air traffic would require more vigilance on the part of civil and military pilots. However, there is sufficient navigable airspace for all VFR aircraft to avoid the increased military operations. The

existing ATC radar facility at MHAFB could continue to be used to provide VFR traffic advisories. As air traffic grows, radar services at MHAFB would require expansion to provide sequencing and separation of VFR aircraft operating within the Mountain Home terminal area.

The projected general aviation activity at Mountain Home Municipal Airport and Glenns Ferry Municipal Airport should not change the airspace requirements for these two facilities. If there is no change in the general aviation activity at the Grindstone Ag Airport, airspace needs for that facility would remain the same. With the continued availability of VFR traffic advisories, the airspace relationship between MHAFB and the four nearby private-use airports should not be affected by the growth in military aircraft operations.

The realignment of aircraft, the increased number of aircraft operations, and the corresponding reduction of uncongested airspace at MHAFB will have significant impacts on the terminal area airspace environment. However, aircraft operations in the contiguous en route airspace system in the vicinity of MHAFB should not be affected by the increased aircraft operations. (Airspace impacts resulting from MTR and MOA activities are addressed in section S.4.1.)

M4.1.6 Mitigations

Mitigations that may be required to minimize the impacts from increased military air traffic and decreased uncongested terminal airspace are as follows:

- o Additional radios, radio frequencies, radar scopes, and support personnel will be required for the MHAFB ATC facility. These upgrades will include engineering and installation modifications.
- o Negotiations between MHAFB and Salt Lake City ARTCC to establish acceptable approach and departure procedures will be required.

M4.2 AIR RESOURCES

M4.2.1 Regulatory Setting

The *Clean Air Act*, Title 40 CFR parts 50 and 51, dictates that the NAAQS must be maintained nationwide. The act delegates authority to state and local agencies to enforce the NAAQS and to establish air quality standards and regulations of their own. The adopted standards and regulations must be at least as restrictive as the federal requirements. The Idaho Board of Health and Welfare (IBHW) has the authority to regulate air pollution sources within the Idaho study area and has adopted rules and regulations for this purpose (IBHW 1987). Although mobile sources such as aircraft are exempt from air pollution permitting requirements, the operation of these sources must comply with the NAAQS shown in Table M3.2-1.

The *Clean Air Act*, Section 169A, states that it is a national goal to prevent any further impairment of visibility within federally mandated Class I areas from manmade sources of air pollution. Visibility impairment is defined as (1) a reduction in regional visual range and (2) atmospheric discoloration or plume blight (as from aircraft exhaust trails). Criteria to determine significant impacts on visibility within Class I areas usually pertain to stationary emission sources; mobile sources are generally exempt from permit review by regulatory agencies. The IBHW criterion for adverse effects on visibility is defined as any unacceptable anthropogenic change to the naturally occurring visibility within a Class I area (IBHW 1987).

M4.2.2 Issues and Concerns

Air quality impacts would occur as a result of construction activity and flight operations at MHAFB. Construction-related impacts would result from fugitive dust (particulate matter) and construction equipment emissions. These impacts would occur intermittently over approximately four years. Aircraft emissions would be the primary source of operational impacts.

M4.2.3 Significance Criteria

Criteria to determine the significance of air quality impacts are based on federal, state, and local air pollution standards and regulations. Impacts would be significant if project emissions (1) increase ambient pollutant concentrations from below to above any NAAQS or (2) impair visibility within federally mandated Class I areas.

M4.2.4 Methodology for Analyzing Impacts

Emissions were estimated for both the construction and operation activities related to the realignment. Operational impacts were determined by estimating the change in ambient pollutant concentrations that would occur as a result of realignment-related emission sources. To evaluate maximum impacts resulting from local flight operations, the air quality assessment model (AQAM) was used (Seitchek 1985). The AQAM is a gaussian dispersion model that estimates ground-level pollutant impacts from aircraft landing and takeoff (LTO) and touch and go (TGO) activities. Air quality construction impacts were assessed qualitatively.

M4.2.5 Impact Assessment

M4.2.5.1 Construction Impacts

Short-term emissions would occur during the construction of new on-base facilities. Most emissions would occur during site clearing and grading activities in the form of fugitive dust. Uncontrolled fugitive dust emissions from ground disturbing activities would be 1.2 tons/acre-month (EPA 1985b), or 0.6 tons/acre-month of PM₁₀ (personal communication, C. Johnson 1989). The total disturbed area resulting from realignment-related facilities that would be constructed on MHAFB is approximately 354 acres. The time period between completion of site grading activities and start-up of foundation and paving activities for each individual site would be approximately two months. Therefore, the total PM₁₀ emissions from construction activities are estimated to be approximately 424.8 tons over a four-year period.

Combustive emissions are generated by equipment associated with construction. These emissions would be greatest during site clearing and grading activities.

Construction-related impacts on air quality would be adverse but short-term. These impacts could be mitigated through implementation of the measures described in section M4.2.6, in accordance with standard construction practice.

M4.2.5.2 Operational Impacts

Future operational emissions that would occur at MHAFB with the implementation of the realignment are shown in Table M4.2-1. Emissions from non-aircraft sources were estimated by factoring existing emissions from these sources by the realignment-related population increase expected at MHAFB. Emissions from aerospace ground equipment, aircraft ground operations, and fuel storage and transfer were estimated by factoring existing emissions by the increase in aircraft LTO/TGO cycles. It is estimated that 137,000 F-4 and 2,600 EF-111 annual LTO/TGO cycles would occur from the project at

Table M4.2-1

**FUTURE EMISSIONS ASSOCIATED WITH THE REALIGNMENT AT MHAFFB
(tons/year)**

	<i>CO</i>	<i>THC</i>	<i>NO_x</i>	<i>SO₂</i>	<i>PM</i>
Coal-fired heating plant	20.9	3.5	84.0	0.4	1.8
Furnaces (fuel oil-fired)	0.7	0.4	2.8	6.7	0.4
Boilers (natural gas-fired)	1.3	0.6	6.5	0.03	0.3
Incinerators	0.01	--	--	--	0.03
Fuel storage and transfer	--	1,145.6	--	--	--
Surface coatings	--	35.8	--	--	--
Diesel vehicles	26.1	4.3	20.5	2.5	1.2
General purpose vehicles	101.3	10.9	10.9	0.4	1.3
Personal vehicles	542.1	58.2	57.9	2.3	7.6
Aerospace ground equipment	137.0	25.9	44.4	3.9	14.7
Aircraft ground operations	213.2	25.3	146.5	35.9	9.1
Aircraft landing/takeoff and touch/go	1,706.7	425.1	536.2	101.4	65.1
TOTAL BASE EMISSIONS	2,749.3	1,735.6	909.7	153.5	101.5
PERCENT CHANGE FROM CURRENT LEVELS	+83.1	+55.7	+130.9	-33.8	-41.7

MHAFB. This is an increase of approximately 385 percent from existing aircraft operations at MHAFB. Aircraft emissions during LTO/TGO cycles were calculated by aircraft type.

The annual emissions estimated for MHAFB would be 2,749.3 tons of CO, 1,735.6 tons of THC, 909.7 tons of NO_x, 153.5 tons of SO₂, and 101.5 tons of PM. These emissions represent the following change in emissions from existing levels: +83.1 percent for CO, +55.7 percent for THC, +130.9 percent for NO_x, -33.8 percent for SO₂, and -41.7 percent for PM. Conversion of the existing coal-fired boilers in the heating plant to natural gas-fired boilers in 1991 would be responsible for the significant decrease in SO₂ and PM emissions. Operation of these new boilers would decrease annual emissions from existing levels at MHAFB by approximately 12.9 tons of CO, 10.5 tons of NO_x, 183.9 tons of SO₂, and 113.0 tons of PM. Annual emissions of THC would increase by approximately 2.8 tons.

Since the increase in total emissions at MHAFB would result mainly from increased aircraft operations, impacts to ambient air pollutant concentrations were evaluated near the MHAFB runway. Maximum ground-level pollutant impacts would occur near the end of the runway since aircraft emissions would (1) be greatest during takeoff cycles, (2) be emitted near ground-level, and (3) be additive and potentially impact the same ground-level location during multiple LTO/TGO cycles.

The impact analysis was based on the assumption that 16 F-4 and four F-111 aircraft would take off and 20 F-4 aircraft would land within the same hour. For a worst-case analysis, the wind was assumed to be one meter/second parallel to the runway and aircraft were assumed to take off and land with the wind. This maximizes emission impacts at one end of the runway. In addition, emissions from each aircraft LTO cycle were assumed to impact the same ground-level location within the same hour. If impacts were determined to be insignificant at the point of highest concentration near the MHAFB runway, impacts would also be insignificant within the remainder of the MHAFB study area.

To estimate total impacts, concentrations of atmospheric pollutants predicted for aircraft were added to worst-case background pollutant concentrations obtained from the IAQB air quality monitoring stations in proximity to the study area (IAQB 1988). The total pollutant concentrations were then compared to the NAAQS to determine if significant impacts would occur. CO background concentrations were derived from the average second highest values monitored at the Mountain View School station in Boise from 1985 through 1987. SO₂ background concentrations were derived from the average second highest value monitored at the Soda Springs station west of Conda from 1985 through 1987. PM₁₀ background concentrations were derived from the second highest value monitored at the Mountain View School station in 1987. These background pollutant concentrations would be greater than worst-case ambient pollutant concentrations expected for future conditions at MHAFB, since they were derived from monitoring stations located in areas with emission sources at least as substantial as those expected for MHAFB. The IAQB does not currently monitor NO₂ and O₃, since previous studies determined low ambient concentrations statewide. However, for the impact analysis,

the annual NO₂ background concentration was assumed to be 50 percent of the NAAQS. The background pollutant concentrations used in the impact analysis are presented in Table M4.2-2.

To compare one-hour modeled impacts to ambient air quality standards with averaging periods longer than one-hour, factors were used to convert one-hour impacts to longer averaging period impacts. This technique is consistent with that recommended by the EPA (1977). The factors used to convert one-hour impacts to longer averaging periods are as follows: 0.90 for 3-hour impacts, 0.70 for 8-hour impacts, 0.40 for 24-hour impacts, and 0.10 for annual impacts.

The results of the impact analysis determined that the assumed scenario at MHAFB would produce the following one-hour ambient pollutant concentrations: 48.0 ug/m³ of CO, 15.4 ug/m³ of THC, 2.2 ug/m³ of NO₂ (assumed to be 10 percent of NO_x), 3.6 ug/m³ of SO₂, and 2.7 ug/m³ of PM₁₀. With the use of the conversion factors and the addition of background pollutant levels to estimated realignment impacts, the total impacts would remain below the NAAQS. Therefore the action would have an insignificant impact on air quality within the MHAFB study area. A summary of the impact analysis of realignment is presented in Table M4.2-2. This table shows that project impacts are very small when compared to background pollutant levels used in the analysis.

To accurately determine the impact of aircraft emissions on ambient O₃ after realignment, a rigorous photochemical modeling analysis would be required. The impacts analysis determined that 1-hour concentrations of O₃ precursors (photochemical reactive hydrocarbons, which are approximately 95 percent of THC for aircraft, and NO_x) would marginally increase as a result of project sources. Under favorable conditions, several hours are required to convert O₃ precursors to O₃ in the atmosphere. With this extended residence time in the atmosphere, project emissions of O₃ precursors would be well dispersed and not be expected to substantially increase ambient concentrations of O₃. Since existing background concentrations of O₃ are low within the study area (IAQB 1988), the total realignment-related impact on ambient O₃ would not be expected to exceed the NAAQS. Impacts on ambient O₃ concentrations would therefore be insignificant.

The impact of aircraft emissions on visibility is an issue with regard to federally mandated Class I areas such as National Parks and Wilderness Areas. The Sawtooth Wilderness Area, approximately 55 miles northeast of MHAFB, is the nearest Class I area to the MHAFB study area. Visibility impairment is defined as (1) a reduction in regional visual range and (2) atmospheric discoloration or plume blight from aircraft exhaust trails or smoke stacks. There are no widely accepted quantitative techniques to estimate visibility impacts from inflight aircraft, as most techniques apply to stationary, ground-level emission sources. However, the potential for visibility impairment within the Sawtooth Wilderness Area from realignment-related emission sources was evaluated by reference to the impact analysis performed at the MHAFB runway.

Table M4.2-2

AIR QUALITY MODELING RESULTS FOR THE REALIGNMENT AT MHAFB
($\mu\text{g}/\text{m}^3$)

<i>Pollutant</i>	<i>Averaging Time</i>	<i>Impact of Realignment</i>	<i>Background Concentration¹</i>	<i>Total Concentration²</i>	<i>NAAQS³</i>	<i>Percent of NAAQS⁴</i>
Carbon monoxide	8-hour	3.3	7085.7	7,089.0	10,000	70.9%
	1-hour	48.0	13,257.1	13,305.1	40,000	33.3%
Nitrogen dioxide	Annual	0.2	50.0	50.2	100	50.2%
Sulfur dioxide	Annual	0.4	18.3	18.7	80	23.3%
	24-hour	1.4	156.4	157.8	365	43.2%
	3-hour	3.2	391.1	394.3	1,300	30.3%
PM ₁₀	Annual	0.2	35.0	35.2	50	70.4%
	24-hour	1.0	69.0	70.0	150	46.7%

- Note:
1. CO and PM₁₀ background concentrations obtained from pollutant data monitored at the Mt. View School station in Boise. SO₂ background concentrations obtained from pollutant data monitored at Soda Springs station, west of Conda (IAQB 1988). Since NO₂ is presently not monitored in Idaho, worst-case annual background concentration was assumed to be 50 percent of the NAAQS.
 2. Realignment-related impacts contribute small percentages of total impacts since they are much smaller than background pollutant levels used in the analysis.
 3. The NAAQS are used to regulate air quality impacts in Idaho and are presented in Table M3.2-1.
 4. The realignment would be expected to have a significant impact on air quality if the total impact for any pollutant was 100 percent or more of the NAAQS.

The results of the impact analysis determined that aircraft operations would minimally increase ambient pollutant concentrations within the MHAFB study area. This would indicate that regional visibility reductions from the realignment would be minimal within the Sawtooth Wilderness Area, as project emissions would be further dispersed during the 55-mile travel distance to this location. Plume blight would occur within an aircraft flight path, but only for a short time period immediately after passage of the aircraft. This effect would be limited to the MHAFB study area. Considering these effects and the extensive distance of the MHAFB study area from the Sawtooth Wilderness Area, project visibility impacts within any Class I area are expected to be insignificant.

M4.2.6 Mitigations

M4.2.6.1 Construction Impacts

Air quality impacts during realignment-related construction would occur from (1) fugitive dust emissions due to ground disturbing activities and (2) combustive emissions from construction equipment. Vigorous water application during ground disturbing activities would mitigate fugitive dust emissions by at least 50 percent (EPA 1985b) to 212.4 tons or less for the 4-year construction period. Decreasing the time period when newly graded sites are exposed to the elements would also mitigate fugitive dust emissions. Combustive emission impacts would be mitigated by efficient use of equipment, a phased construction schedule to reduce the number of units operating simultaneously, and performing regular programs of vehicle engine maintenance. If the above-mentioned mitigation measures are implemented, it is not expected that any significant air quality impacts would occur during construction.

M4.2.6.2 Operational Impacts

No significant impacts on air quality would occur from aircraft operations within the MHAFB study area. No mitigations are necessary.

M4.3 NOISE

M4.3.1 Regulatory Setting

The analysis of noise and its impact on the environment are addressed in the following two federal regulations:

Executive Order 12088, Federal Compliance with Pollution Control Standards, requires the head of each executive agency to be responsible for ensuring that all necessary actions are taken for the prevention, control, and abatement of environmental pollution, including noise pollution, with respect to federal facilities and activities under the control of the agency.

The Air Force Air Installation Compatible Use Zone (AICUZ) Program is discussed in section M3.3. The AICUZ incorporates federal and state noise standards for developing compatible land use planning and zoning. One of the primary issues addressed is noise generated by aircraft and airfield operations. The program contains specific noise policy and implementation guidelines, as well as methods for assessing noise impacts associated with air installation land uses. The program addresses compatible use zones, which are a function of noise and accident potential.

M4.3.2 Issues and Concerns

The issues and concerns pertaining to the analysis of noise levels resulting from the realignment include the following:

- o The change in the ambient noise levels in the vicinity of MHAFB due to the net increase of 59 aircraft at the base.
- o The degree to which noise levels will change in and around MHAFB due to the change in the type of missions flown by F-111A aircraft and those flown by F-4E and F-4G aircraft.
- o The increased land area that will be impacted by noise levels greater than 65 L_{dn}.

M4.3.3 Significance Criteria

The basis for determining the significance of noise impacts on the environment in the vicinity of military airfields is taken from the DOD-developed AICUZ program. The AICUZ program provides threshold noise levels for various land uses that could typically be found near military airfields. The

AICUZ assists local communities and the Air Force in managing land uses that could be affected by noise and safety hazards generated by military aircraft operations.

The significance criteria for human activity near airfields exposed to noise from military aircraft include the following:

- o Noise levels less than 65 L_{dn} are considered to be insignificant. According to Department of Housing and Urban Development (HUD 1980) guidelines, it is "acceptable" for humans to be exposed to noise levels less than 65 L_{dn} .
- o Noise levels between 65 and 75 L_{dn} are considered to be significant but mitigable, through the use of noise attenuation measures. HUD classifies this range of noise as "normally unacceptable" in protecting public health and welfare with an adequate margin of safety (DOT 1980).
- o Noise levels greater than 75 L_{dn} are considered to be significant and unmitigable. HUD classifies these noise levels as "unacceptable."

(Refer to section M4.8, Land Use, for a discussion of the various land uses in the ROI that could be affected.)

M4.3.4 Methodology for Analyzing Impacts

The analysis of projected noise impacts at MHAFB after realignment was performed by the U.S. Air Force Engineering and Services Center (AFESC/DEMP). Aircraft operational data provided by the EF-111A and F-4E/G wings were entered into the NOISEMAP computer program to generate the contours of the noise environment expected at the base after realignment. Noise generated by engine runup and ground maintenance tests was incorporated into the model. The flight track and ground runup information and single event levels were combined to form a composite L_{dn} measure for all aircraft. Equal L_{dn} values on the grid were then connected to form the noise contours on which the AICUZ was based (see Figure M4.3-1).

Refer to section M3.3.3, Baseline Noise Analysis Methodology, for a complete discussion of the methodology used for estimating both the baseline and post-realignment noise environments.

M4.3.5 Impact Assessment

The change in aircraft types and the net increase of 59 aircraft at MHAFB would result in increased noise in the immediate vicinity of the base. In addition, potential noise impacts could be increased due

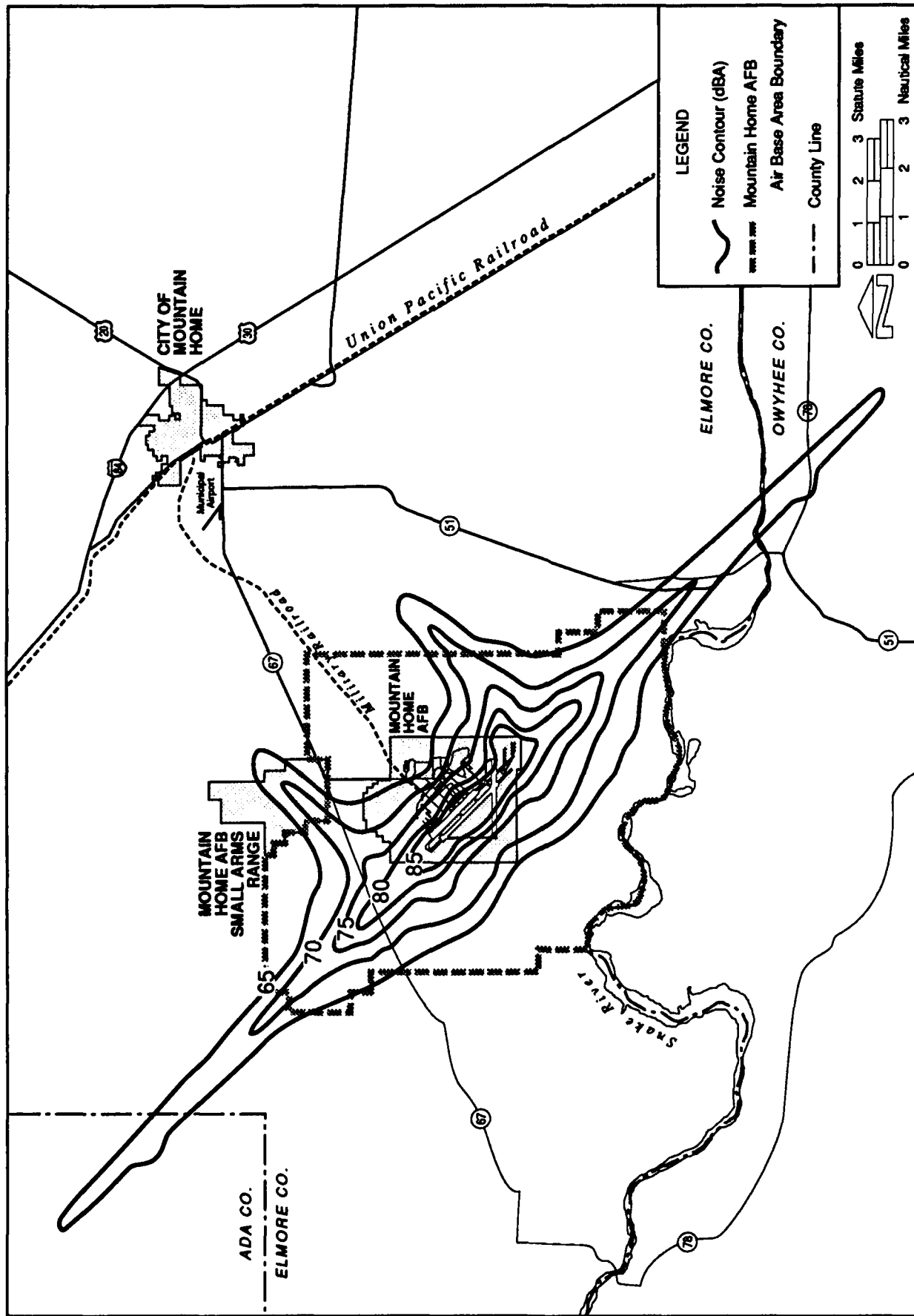


Figure M4.3-1
POST-REALIGNMENT NOISE CONTOURS
MOUNTAIN HOME AFB

to the nature of the training missions of the 35 TFW (F-4E/Gs). Aircrews just out of pilot and navigator schools are exposed to their first complex jet fighter when they are assigned to the 35 TFW. Flight training in the F-4E is the primary mission of all squadrons, except for the F-4G Wild Weasels, which is an operational squadron. Learning how to take off and land in all weather conditions is one of the primary training aspects of the F-4E FTU syllabus.

The frequency of takeoffs and landings at MHAFB will increase after realignment. (One takeoff or one landing is defined as an "operation.") Following the realignment of MHAFB in 1992, the frequency of annual F-4E and F-4G aircraft operations is projected to be approximately 137,000. An increased number of nighttime takeoffs and landings would also be expected, since learning to fly a high-performance jet fighter at night is another key component of the training syllabus. In addition to the greater frequency of operations in the MHAFB terminal area, the F-4E/G aircraft are equipped with older model power plants.

The projected frequency of operations for the EF-111A aircrews, currently based at MHAFB, is expected to remain relatively constant between the current operations and after realignment: 2,600 annual operations.

The noise environment around the base after realignment is illustrated in Figure M4.3-1. The contours were generated based on current and projected F-4E/G and EF-111A operations. The predominant differences between the current noise environment (see Figure M3.3-2) and that resulting from realignment are:

- o The area affected by noise levels greater than 85 L_{dn} is currently 1,000 acres in size, whereas the realignment will cause this level to affect an area of 2,000 acres. This will result in a 100-percent increase in the size area affected by sound levels greater than 85 L_{dn} .
- o The area affected by noise levels greater than 80 L_{dn} is currently 2,500 acres in size, whereas the realignment will cause this level to affect an area of 4,200 acres. This will result in a 68-percent increase in the area affected by noise levels greater than 80 L_{dn} .
- o The area affected by noise levels greater than 75 L_{dn} is currently 5,600 acres in size, whereas the realignment will cause this level to affect an area of 8,300 acres. This will result in a 48-percent increase in the area affected by noise levels greater than 75 L_{dn} .
- o The area affected by noise levels greater than 70 L_{dn} is currently 12,000 acres in size, whereas the realignment will cause this level to affect an area of 17,000 acres. This

will result in a 42-percent increase in the area affected by noise levels greater than 70 L_{dn} .

- o The area affected by noise levels greater than 65 L_{dn} is currently 22,000 acres in size, whereas the realignment will cause this level to affect an area of 34,000 acres. This will result in a 55-percent increase in the area affected by noise levels greater than 65 L_{dn} .

The area that will be principally affected by the realignment and that is not currently impacted is beneath the flight paths leading to Runway 30/12. As a result of the realignment, noise levels of 65 dBA and greater will extend more than twice as far as current levels from the departure ends of the runway. The two northeasterly extensions that are present in the current noise environment will be present after realignment and will remain approximately the same size. Table M4.3-1 illustrates the net impact to the environment in the vicinity of MHAFB. For a discussion of the receptors that would be affected by the increased noise environment as a result of the realignment, refer to section M4.8.

M4.3.6 Mitigations

Since no off-base sensitive receptors are located in the area subject to increased noise after realignment, no significant localized noise impacts are anticipated to result from the realignment. However, increased noise may affect regional environmental resources. Measures to mitigate realignment-generated noise impacts are discussed in sections for biological resources (sections M4.4.5.2, M4.4.5.3, and M4.4.6) and land use (section M4.8.5.4 and M4.8.6.2). Other resources, such as earth and water, will not be affected by increased noise generated by the realignment.

Table M4.3-1

LAND USE WITHIN MHA FB NOISE CONTOURS AFTER REALIGNMENT

Affected Land Use Component	DAY-NIGHT NOISE LEVELS, L_{dn}				
	85	80	75	70	65
Total Area (acres)	2,000	4,200	8,300	17,000	34,000
Percentage Increase After Realignment ¹	100	68	48	42	55
Number of Dwellings ² (off-base)	0	0	0	0	0
Number of Residents ² (off-base)	0	0	0	0	0
Percent of Land Area ¹					
Residential	0	0	0	0	0
Commercial	0	0	0	0	0
Agricultural	10	40	60	75	90
Military (on-base)	90	60	40	25	10

- Note:
1. Percentages derived by comparing total affected acreage after realignment with total affected acreage before realignment (see Table M3.3-2).
 2. There would be no change in the number of off-base dwellings or residents affected by increased noise levels after realignment.

M4.4 BIOLOGICAL RESOURCES

M4.4.1 Regulatory Setting

Federal Regulations

Endangered Species Act of 1973, 16 USC section 1531 et seq., as amended, protects proposed and listed threatened or endangered species. Formal consultation with the USFWS is required under section 7 of the act for federal projects and all other projects that require federal permits (e.g., Corps of Engineers permits) where such actions could directly or indirectly affect any proposed or listed species.

Migratory Bird Treaty Act of 1972, 16 USC sections 703 through 711, protects migratory waterfowl and all seabirds by limiting the transportation, importation, killing, or possession of those birds.

Clean Water Act of 1977, 33 USC 1251 et seq., requires a National Pollution Discharge Elimination System (NPDES) permit for all discharges to reduce pollution that could affect any form of life. Section 404 of this act regulates development in streams and wetlands and requires a permit from the U.S. Army Corps of Engineers.

Rivers and Harbors Act of 1899, sections 9 and 10, 33 USC section 1344, regulate all types of development in or over navigable waters, including bridges, dams, dikes, piers, wharfs, booms, weirs, jetties, dredging, and filling by requiring a Corps of Engineers permit for such actions. Navigable waters are defined in title 33 CFR section 329 to include past, present, and potential future use in transporting commerce. Court decisions have expanded protection to estuaries and wetlands (Dedrick 1984).

Executive Order 12088, Federal Compliance with Pollution Control Standards, requires the head of each executive agency to be responsible for ensuring that all necessary actions are taken for the prevention, control, and abatement of environmental pollution with respect to federal facilities and activities under the control of the agency.

Executive Order 11990, Protection of Wetlands, requires that governmental agencies, in carrying out their responsibilities, provide leadership and take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. Each agency is to consider factors relevant to a project proposal's effect on the survival and quality of the wetlands by maintenance of natural systems, including conservation and long-term productivity of existing flora and fauna, species and habitat diversity and

stability, hydrologic utility, fish, and wildlife. Agencies are required to provide for early public review of any plans or proposals for new construction in wetlands.

Executive Order 11988, Floodplain Management, requires that governmental agencies, in carrying out their responsibilities, provide leadership and take action to restore and preserve the natural and beneficial values served by floodplains. This order requires each federal agency to determine whether the project will occur in a floodplain and to consider alternatives. If no practical alternative is found, it requires minimizing harm and notifying the public why the project must be located in the floodplain, and it provides for public review and comment.

Fish and Wildlife Coordination Act, 16 USC section 661 et seq., requires the Corps of Engineers to consult with the USFWS and state wildlife agency or agencies on all permit applications for projects in waterways or wetlands under Corps jurisdiction.

Federal Cave Resources Protection Act of 1988, requires protection of significant caves on federal land and protects the flora and fauna within the caves. It establishes civil and criminal penalties for damaging or disturbing significant caves.

M4.4.2 Issues and Concerns

Biological resources could be affected by the realignment of MHAFB through (1) construction and use of facilities and housing on MHAFB, (2) increased aircraft flight activity at the base, and (3) activities associated with population growth (indirect impacts) such as increased urbanization in the city of Mountain Home and recreation activities throughout the ROI. Impacts of training activities on the range and in the associated MOAs and MTRs are discussed under the proposed expanded range capability portion of this EIS (Section S4.4 of Volume II). The primary issues to be addressed at MHAFB are:

- o Habitat loss or degradation resulting from land disturbance during construction of facilities and housing at MHAFB.
- o Indirect effects of induced population growth at Mountain Home and MHAFB. This includes sewage and solid waste disposal, introduction of exotic species (i.e., pets), recreation, vehicular traffic, and poaching.
- o Effects of increased aircraft flight activity at MHAFB, such as noise and bird-aircraft strikes.

These impacts would range from short to long term. Each is analyzed below, and mitigation measures are recommended to minimize impacts.

M4.4.3 Significance Criteria

Determination of the significance of impacts was based on: the importance (legal, commercial, recreational, ecological, or scientific) of the resource; the proportion of the resource that would be affected relative to its occurrence in the region; the sensitivity of the resource to construction, operation, or overflight activities; and the duration of the ecological ramifications of the effect. In the wildlife analysis, impacts are also considered significant if wildlife management, as it relates to species of high concern, is adversely affected over relatively large areas.

M4.4.4 Methodology for Analyzing Impacts

For construction, impacts were analyzed by (1) comparing biological resource distribution information to locations of proposed facilities and (2) evaluating the sensitivity of these resources to the proposed disturbances. Resource data were obtained from the Idaho Department of Fish and Game (DFG), Idaho Natural Heritage Program, BLM, USFWS, and a reconnaissance survey of MHAFB and the area surrounding the city of Mountain Home. For indirect impacts, the analysis relies on the results of the socioeconomic, transportation, earth resources, water, and recreation analyses along with literature information on the responses of biological resources to human-related disturbances. Effects of aircraft activity at the base were addressed considering the total number of and relative increases in flight activity, noise from these activities, and the distribution of wildlife in the immediate vicinity of the base.

M4.4.5 Impact Assessment

M4.4.5.1 Impacts of Facilities

Construction activities on MHAFB would disturb 354.3 acres out of the 5,760 acres within the base boundary. Of this, approximately 200 acres would be for buildings, 100 acres would be for sewage treatment, and 50 acres would be new runway. The area for buildings is assumed to include landscaping (e.g., yards for housing). At present, realignment does not include plans for new facilities at or increased use of the Small Arms Range. At the city of Mountain Home, the area to be disturbed for construction of housing and associated facilities (e.g., shopping centers, parking lots, gas stations, schools, and other commercial buildings) is unknown but is estimated to be about 150 to 200 acres. It is assumed to be within or adjacent to the city of Mountain Home and not as scattered individual houses throughout the area surrounding MHAFB. Construction activities that could affect biological resources include vegetation clearing, grading and trenching, noise, and dust. A site-specific reconnaissance survey of the realignment-related construction areas on MHAFB was conducted on 18

October 1989, and no habitat suitable for sensitive animal species was found. Although the survey results suggested that MHAFB lacked sufficient undisturbed habitat for montane peppergrass (a proposed federal candidate species), some suitable habitat may be present. A general survey of vacant land in and around Mountain Home identified only a few sensitive areas. These are all areas that have been mapped by the USFWS wetlands inventory. Impacts to specific resources are discussed below.

Vegetation

About 44 new facilities encompassing approximately 350 acres (excluding roads) would be required for the realignment to MHAFB (see section 2.0, project description). Most of these facilities would be located in either landscaped or previously disturbed weedy areas of the base, and little clearing of vegetation would be required. Exceptions to this include the military family housing area and the fire station, which are to be located in moderately disturbed sagebrush-grass vegetation in the northeastern corner of the base. About 150 to 200 acres of vegetation would be cleared for these facilities. Loss of this vegetation would be an adverse but insignificant impact because of the disturbed nature of the vegetation. No playa lakes are present on the base. Clearing and other construction activities would generate a temporary increase in the amount of dust in the area; this would represent an incremental increase in sources of fugitive dust in the area and is not expected to produce a significant impact on vegetation. No state sensitive plant species are known to occur on MHAFB or in the immediate vicinity of Mountain Home.

Wildlife

Vegetation clearing and construction of facilities at MHAFB and Mountain Home would result in a permanent loss of wildlife habitat. At MHAFB, this would be approximately 350 acres, and in the city of Mountain Home it would be about 150 to 200 acres. Noise and human presence associated with construction would displace larger animals, while smaller animals with limited mobility would be killed. Species intolerant of these activities would avoid the construction area. Less mobile species and those seeking refuge in burrows would be killed. Survival of the displaced individuals would depend on availability of nearby suitable habitat with additional capacity for more animals. In addition, conversion of existing habitat to landscaped areas around the buildings would displace many of the animals presently there. Ornamental and non-native vegetation, however, has some value to wildlife, although it generally attracts non-native species such as house sparrows and starlings (Emlen 1974). Overall impacts of increased urbanization in areas that are already substantially altered by human activities is expected to impact only local wildlife populations in the MHAFB and Mountain Home area.

Impacts of realignment-generated dust on wildlife populations in the study area are expected to be short-term, localized, and insignificant.

Human presence associated with these facilities, especially housing, would also affect wildlife in the immediate vicinity. Animals intolerant of human disturbances would decline in abundance (e.g., owls and badger) while those that are tolerant (e.g., coyote and gophers) could increase in abundance.

Aquatic Biota

Construction of facilities on MHAFB and urban expansion at Mountain Home are unlikely to have any significant impacts on aquatic habitats. Drainages in the area are intermittent or ephemeral and thus support aquatic organisms for only part of the year. No aquatic habitats would be affected on the base, but several wetlands in or near Mountain Home could be affected. Since the location and design of the off-base housing is presently unknown, impacts cannot be predicted.

Threatened and Endangered Species

No federally listed species are likely to be affected by construction related to the action at MHAFB. Approximately five bald eagles winter in the area (USFWS unpublished data) and are generally found in close association with the Snake River, particularly C. J. Strike Reservoir. Peregrine falcons may pass through the area during migrations but are not likely to be attracted to the construction sites.

Of the candidate species for federal listing known to occur in the vicinity of MHAFB and Mountain Home, only two plant species (Davis' peppergrass and montane peppergrass) could be affected by construction activities. A reconnaissance field survey of the base and the Mountain Home area indicates that neither species is likely to be present in currently identified construction areas on the base. Not all potential building sites were visited, but no playa lakes, the known habitat of one of these species, are present on the base and the existing vegetation consists of introduced species and weedy areas, landscaped areas, and moderately to highly disturbed sagebrush-grass. Small playas (habitats for montane peppergrass) could be present in the least disturbed portions of MHAFB and in the vicinity of Mountain Home, although none were found during the initial reconnaissance survey. A more detailed survey could reveal habitat for montane peppergrass. The potential for impact remains, primarily in the northwest portion of the base and around the city of Mountain Home, but is very low. No impacts are expected for other candidate or sensitive species.

M4.4.5.2 Impacts of Population Growth

Increasing the number of people living on and near MHAFB could affect biological resources through (1) sewage treatment and disposal, (2) solid waste disposal, (3) introduction of exotic species of plants and animals (pets), (4) recreation (e.g., ORV use, boating, camping, hiking, hunting, and fishing), (5) vehicle traffic, and (6) poaching. With the exception of recreation and poaching, impacts of these activities are expected to be concentrated in the immediate vicinity of MHAFB, the city of Mountain

Home, and the highway connecting them. Recreation impacts would be dispersed throughout the ROI with peaks at the more attractive recreation sites (e.g., C. J. Strike Reservoir). Poaching would also be dispersed and primarily in remote areas.

The present population of MHAFB and Mountain Home is approximately 14,800. The increase in population from direct and indirect in-migration is estimated at 5,500 people (see section M4.10.5). About half of the increase would be military personnel and their dependents who will live on MHAFB. Overall, the population of the area would increase by approximately 37 percent. As described in the recreation analysis, most recreation by these people is assumed to occur within a two-hour drive of MHAFB.

Vegetation

Indirect impacts to vegetation could result from activities associated with increases in population occurring as a result of the realignment. Impacts to vegetation would be expected from increased recreational use of some areas, particularly ORV activities. The amount of vegetation that would be degraded has not been quantified, but is expected to be minimal. All major community types found in the study area would potentially be indirectly impacted, but those occurring near towns and recreational areas would receive the greatest impact. These include tall sagebrush-grass, shadscale, riparian, western juniper woodland, mountain mahogany chaparral, aspen, and coniferous forest.

The projected influx of people from realignment could increase the amount of ORV use in the area. These impacts would be both direct and indirect. Direct impacts include crushing of foliage, uprooting of small plants, disruption of root systems of larger plants, and an increased potential for human-caused fires. Indirect impacts on vegetation include undercutting of root systems as vehicle paths are enlarged by erosion, and burial of plants with eroded material. In areas where soil has been disturbed or where the native plant cover has been degraded, exotic species may invade. Cheatgrass, tumble mustard (*Sisymbrium* sp.), tansymustard (*Descurainia* sp.), and other noxious weed species may increase in distribution in areas impacted by recreational activities.

Sensitive plant species occurring at recreational areas within the ROI could be affected by the projected population influx, but the likelihood of these impacts cannot be predicted at this time.

Wildlife

Potential impacts on wildlife relate to (1) habitat alteration from solid and liquid waste disposal and recreational activities, and (2) direct mortality of animals from hunting, fishing, poaching, and vehicular traffic.

Additional sewage treatment facilities will be needed on MHAFB and at Mountain Home. How these would affect wildlife depends on the type of facility and method of disposal. Open treatment and evaporation ponds will attract dove, quail, waterfowl, and other birds. This could be beneficial to local populations of these birds if water is a limiting resource in the area. Disposal by spray irrigation or discharge to surface waterways would alter vegetation and thus wildlife habitat. Any increase in wetland and riparian habitat would likely be beneficial while replacement of native shrub or grassland habitat by irrigated non-native species would be detrimental to most wildlife species. The potential impacts associated with the new sewage treatment facilities are not expected to be significant.

Solid waste disposal is assumed to be by landfill. These sites attract scavengers such as rats, ravens, gulls, house mice, and some types of snakes. Predators (e.g., coyote, badger, and raccoon), in turn, are attracted by the abundance of these scavengers. Some of these species would increase the potential for disease transmission among wildlife and humans, and the non-native species may locally displace native species in the vicinity of the disposal site and/or increase predation on them (HDR 1981). Currently, solid wastes are disposed of on the base, but landfill space is limited. When the existing capacity is used up, the base will likely contract with a local disposal company in Mountain Home for removal of solid wastes. The new county landfill has at least a 30-year capacity, so the addition of base solid wastes should not affect this use-life appreciably or require a new landfill. Impacts related to the realignment would be insignificant.

Along with the increase in the local population will come more pets, such as cats and dogs, that roam free most of the time. Some may even become feral. These animals often harass or kill wildlife such as birds, rodents, reptiles, and predatory mammals (Boggess et al. 1978; Christien 1974; Denny 1974). They may also displace native species (Emlen 1974). The incremental increase in pets expected to result from realignment, however, would have no significant impacts on wildlife near the base or Mountain Home.

Recreational activities of the in-migrants have the potential to adversely impact wildlife. Although activities such as ORV use could occur at many locations throughout the ROI, most forms of recreation will likely be concentrated within the Snake River valley (e.g., fishing, boating, picnicking, and several kinds of hunting) or in nearby foothills and mountains. Wildlife would be affected by these activities since areas most attractive for recreation are often the most likely to contain high concentrations of wildlife. Of particular concern is the potential for impacts to raptors nesting in the Snake River Birds of Prey National Conservation Area (BOPA) and increased shooting of prey animals.

ORV use is expected to be a common form of recreation used by the in-migrants. It can affect wildlife through fires, noise, soil disturbance, and direct mortality. Noise and visual stimuli from these vehicles could cause mobile species (e.g., pronghorn and sage grouse) to evacuate the disturbance area, at least

temporarily. Noise can also cause a temporary (hours to weeks) hearing impairment in some species, such as kangaroo rats (Brattstrom and Bondello 1983), which in turn could increase their susceptibility to predation. Soil disturbance could lead to changes in vegetation, and thus forage and cover for wildlife. Direct mortality could occur through burrow collapse and collision of vehicles with animals. Impacts to individual species cannot be predicted since locations and level of activity are unknown; however, general types of impacts can be identified. Several studies have shown that the density (biomass) and diversity (number of species) of rodents, reptiles, and birds decreases in areas of moderate to high ORV use and that this disturbance extends over a wide area (Bury et al. 1977; Byrne 1973; Luckenbach 1978).

Boating (including rafting) on reservoirs and rivers in the ROI is also likely to increase as a result of realignment at MHAFB. Power boating can affect water-associated birds and aquatic organisms. The latter are discussed under Aquatic Biota (below). Birds would be affected by increased boating activity through disturbance while resting or foraging on the water. Forced flight by these birds requires expenditure of energy and may reduce energy stores necessary for migration. Bird disturbance from the incremental increase in power boating likely to occur as a result of the action would not be expected to have any significant impacts on populations of water-associated birds in the ROI.

Increased rafting and power boating on the Snake River through the BOPA would increase the level of human presence in this high-value wildlife habitat. During spring and early summer, this activity would have the potential to affect raptor nesting, especially if people come ashore and climb on the cliffs, take target practice with guns, or throw rocks down the cliff. A recent study of prairie falcons (Holthuijzen 1989) recommends that activities such as target shooting, camping, and ORV use be prohibited within 1,500 feet of the cliffs. Climbing on cliffs that contain nests and rolling boulders over cliffs should also be prohibited. This type of disturbance could also occur on the Bruneau River and the Payette River. Impacts could be locally significant in the worst case.

Camping, hiking, and similar activities by project-related in-migrants would increase human presence in wildlife habitat, especially activities away from well developed campgrounds. This could degrade habitat and cause some animals to avoid human use areas. Species tolerant of human presence (e.g., blackbirds, crows, and house sparrows) would likely increase in abundance while less tolerant species could decline. This is particularly true for larger animals such as elk, mountain lions, and bighorn sheep. Nesting raptors could also be affected in the BOPA as described for boating impacts above.

Legal hunting should have little effect on managed game species (e.g., big game and upland game birds) with bag limits because these limits are set so that harvest does not deplete populations. Populations of species that are less regulated and not censused regularly, such as Townsend ground squirrels and black-tailed jackrabbits, may decline locally as a result of increased hunting pressure. In

the case of game species, the IDFG may occasionally have to alter management, such as through reduced bag limits, to maintain population levels.

Poaching of animals would likely increase due to the increased number of people in the ROI. This would affect both game and non-game species (e.g., raptors). Mule deer are the animals most likely to be poached due to their abundance, size, and the value of their meat. The potential for poaching and other game law violations by in-migrants would require additional policing and educational activities by the Idaho Department of Fish and Game. Currently, only one conservation officer patrols the Mountain Home area. The predicted population growth would likely require another conservation officer to assure protection of wildlife resources in the area and to help educate the in-migrants about Idaho game laws. This would affect the IDFG's ability to manage wildlife since they would have to take an officer from another area or cut funds from one or more wildlife programs to support this position. Impacts on wildlife could be locally significant if a new conservation officer is not provided.

Overall, recreational activities by the in-migrant population have the potential to adversely affect wildlife. Recreation at established sites such as campgrounds and parks would incrementally increase the level of disturbance to wildlife at locations that are not already at capacity. Impacts on wildlife at these sites are predicted to be insignificant considering the estimated project-related population increase and the number of recreation sites available. For locations that are currently at capacity and for which no increase in use would be allowed by facility managers, no impacts are expected.

Vehicular traffic would increase approximately 50 percent between Mountain Home and MHAFB (refer to section M4.9), and would result in an increase in the number of animals killed by vehicles. Species most likely to be affected include reptiles, rodents, rabbits, and some birds (e.g., horned larks) that are frequently found on or near roads. Impacts on populations of these animals, however, would be insignificant.

Aquatic Biota

Population growth could affect aquatic biota in many of the same ways as described for wildlife: increases in sewage treatment and disposal, recreation, and poaching. Sewage ponds would provide habitat for aquatic organisms, particularly insects and plankton. Discharge of treated wastewater into intermittent surface drainages would increase aquatic habitat in this arid area. These would generally be beneficial; however, any degradation of existing surface water quality would be a detriment to indigenous aquatic biota. Spray irrigation or recycling of wastewater would have minimal effects on aquatic biota.

Boating and other water-related recreational activities could result in reduced water quality or habitat degradation that would then affect aquatic organisms. Impacts are expected to be insignificant for

larger water bodies but could be significant if heavy use were to occur in small habitats such as streams. This includes fishing and ORV use in riparian or aquatic habitats. These impacts would be local and probably long term.

Poaching of fish is unlikely to have measurable effects on warmwater fish such as those found in reservoirs (e.g., bass, bluegill, and catfish) but could adversely affect trout in some streams. Specific locations of impact cannot be determined at this time.

Threatened and Endangered Species

Threatened and Endangered species occurring in the study area would be affected primarily by an increase in recreational pressures, similar to wildlife (discussed above). Since exact locations and levels of recreational activity are unknown, impacts cannot be quantified. As identified in section M4.8 (Recreation), it is likely that recreational areas that are currently popular will experience an increase in use. These include Bruneau Sand Dunes State Park, C. J. Strike Reservoir, Anderson Ranch Reservoir, Silver City, the Hagerman Valley, 1,000 Springs, the North Fork of the Payette River, and the northern flanks of the Owyhee Mountains. The potential for impact to threatened and endangered species is discussed below.

Bald eagles wintering along the Snake, Boise, and Payette rivers could be disturbed by increased recreational activities such as boating and fishing. C. J. Strike Reservoir is a local concentration area for wintering bald eagles, and an increase in activity could disturb eagles while foraging, although this is not likely to be significant. No bald eagles are reported to nest at C. J. Strike Reservoir. Bald eagles have nested, however, near Anderson Ranch Reservoir. One historical nest was located in 1986, and a pair of birds was observed nesting in 1986, 1987, and 1988 (Idaho NHP 1989). The nest failed in 1989.

Substantial increases in recreation in the Anderson Ranch area could affect future nesting success. In Nevada, it is believed that recreational pressures led to the abandonment of a nest near Jackpot (personal communication, R. Price 1989).

Although there is a historical peregrine falcon nest near C. J. Strike Reservoir, the birds are now only migrants in the area. This species is not likely to be affected by an increase in recreational activities in the study area. Gray wolves and wolverines are occasionally observed in the backcountry above Anderson Ranch Reservoir. It is not likely that these species would be affected by an increase in recreational activity, but potential impacts would depend on the level of activity.

The proposed endangered Bruneau Hot Springs snail resides in two springs near the town of Bruneau. Population growth related to realignment at MHAFFB increases the potential for impact to this species through recreation. The level of impact would depend on availability of public access and whether the

springs were developed for recreational use as a result of the realignment. The likelihood of project-related impacts to this species cannot be predicted at this time. In a most-likely case, no significant impacts would occur. In a worst-case scenario, however, impacts could be significant.

Candidate species such as ferruginous hawks and long-billed curlews could be affected by increased human activity in the area. Ferruginous hawks nest in the BOPA, and in scattered areas throughout the study area. These birds and their nesting areas could be affected by recreational activity such as rock climbing and ORV use.

Candidate aquatic species (the Shoshone sculpin and three species of mollusks) could be affected by immigrant recreational activities that degrade habitat quality. Such impacts are difficult to assess since the amount of use at any specific location is unknown. Considering the size of the predicted population growth and the availability of numerous attractive recreation sites in the region, impacts to these four aquatic species are expected to be insignificant.

Two candidate plant species, Davis' peppergrass and montane peppergrass, could be affected by increased ORV activity near the base and the city of Mountain Home. Another candidate plant species, Murphy milkvetch (*Astragalus camptopus*), occurs in the Owyhee front area, which has been identified by the BLM as a popular ORV-use area. These species could be affected as discussed in the vegetation section. Other sensitive species occurring in recreational areas could also be affected, but the likelihood of impact cannot be predicted at this time.

M4.4.5.3 Impacts of Aircraft

The increase in the number of aircraft stationed at MHAFB will result in more flight activity in the immediate vicinity of the base. Impacts of flight activity away from the base are addressed in section S4.4 of Volume II. Vegetation and aquatic biota are not expected to be affected by flight activity at the base and are not discussed here.

The noise analysis (section M4.3) indicates that the 85-dBA contour would approximately double in length and width along the runway, but it would extend only a short distance beyond the base boundaries. The 65-dBA contour would also about double in length beyond the ends of the runway for an increase of about 7 miles in each direction (northwest and southeast), and the southeastern extension would cross the Snake River. These noise levels represent an increase in the average daily noise level and not the noise from a single overflight event. Aircraft taking off and landing at MHAFB will fly the same patterns as currently used, but the number per unit of time (i.e., frequency) of noise events will increase due to the realignment. Presently, approximately 57,000 take-offs and landings occur per year. This is predicted to increase to about 140,000 per year after realignment. Thus, the

future frequency of noise events within this contour is estimated to increase almost 2.5 times the existing frequency.

The increase in average noise levels and the frequency of single noise events could affect wildlife through startle responses, hearing impairment, or physiological stress. Impacts on small mammals and reptiles are expected to be minimal. Startle responses or temporary hearing impairment could increase their susceptibility to predation, but these effects would be local and to only a few individuals. Larger animals, such as coyote and deer, will likely adapt to the increased noise, although some may avoid at least part of the area within the 65-dBA contour. Population-level impacts are expected to be insignificant.

Raptors in the BOPA could be adversely affected by the increase in noise, particularly during the spring nesting period. The 65-dBA contour is within the BOPA and extends over the Snake River. The maximum single-event noise at ground level over the Snake River predicted for F-4 aircraft taking off from or landing at MHAFFB is 94 dBA during a landing approach (1,500 feet AGL) and 98 dBA for a takeoff (2,500 feet AGL). As noted in the environmental setting, numerous raptors nest in the cliffs along the Snake River and forage over the adjacent uplands. Existing information on the response of nesting raptors to noise from aircraft overflights indicates that most species are not very sensitive to such disturbance and that habituation to noise is likely (Ellis 1981; Jackson et al. 1977; Lamp 1989; Anderson et al. in press). Blasting and construction effects on prairie falcons nesting near Swan Falls Dam on the Snake River were found to be insignificant (Holthuijzen 1989), even though the peak noise level at the aerie reached 140 dB (Holthuijzen et al. in press). The only raptor species likely to be particularly sensitive to noise disturbance during nesting is the Swainson's hawk (Lamp 1987).

Considering the high frequency of noise events presently occurring in the BOPA, raptors foraging over the uplands near MHAFFB have likely habituated to this type of noise. The realignment would increase the frequency of this disturbance. Impacts on raptor foraging are expected to be insignificant in the most likely case, but some avoidance of the noise footprint could result from the project. Whether such avoidance would have any measurable effects on raptor reproduction or population size is unknown.

A number of water-associated birds are sensitive to aircraft disturbance (e.g., snow geese, pintail, green-winged teal, and widgeon) while many others are more tolerant (Lamp 1989). Since the flight path crosses only a small portion of the Snake River and is currently fairly heavily used, impacts of increasing the frequency of this use on water-associated birds are predicted to be insignificant. It is not likely that waterfowl production at the C. J. Strike Reservoir would be affected because of the distance (four or five miles) between the flight path and the reservoir.

Increasing flight activity at MHAFB could also affect birds through direct mortality from collisions with aircraft and through scare methods used to keep birds away from the runway. The present rate of bird-aircraft strikes at MHAFB is low, approximately 5 per million nautical miles of flight per month (see section M3.12). Although increased flight activity will increase bird mortality, the likely increase in bird strikes would be small and would not affect even the local population size for any species. Increasing the number of sewage lagoons near the runway, however, would increase the potential for bird-aircraft collisions. To protect the aircrews and aircraft, measures will probably be taken to scare the birds away from the lagoons and runway more frequently than is now the case. Stress and mortality from these measures would likely have greater impacts on the birds than the low rate of mortality from collision with aircraft. Impacts on populations of the species commonly found on the base, however, would be insignificant.

Increasing the frequency of flights over the Snake River within the BOPA would increase the probability of collisions with raptors, particularly during courtship when the birds soar up to 15,000 feet AGL (personal communication, M. Nelson 1989). Species that could be affected include the golden eagle, prairie falcon, red-tailed hawk, and ferruginous hawk. Any increase in the natural mortality rate for such species could have long-term impacts at the population level since these are long-lived birds. In addition, loss of adults could change dispersal patterns from the Snake River to other canyons to the south if young produced in the BOPA replace the project-induced losses there rather than dispersing to other areas.

Bats roosting in caves are not likely to be affected by an increase in daytime flights in the area, and, although an increase in early morning and evening flights could lead to increased mortality from collision, the population level impacts would be insignificant.

Species occurring in the area that are federally-listed as endangered or threatened, or that are candidates, are not likely to be affected by the increase in aircraft activity. It is not likely that an increase in noise event frequency will significantly affect wintering bald eagles along the Snake River in the flight path area, which is currently exposed to up to 15 noise events per hour. Ferruginous hawks are currently known to nest under the flight path and appear to have habituated to overflights. No significant noise impacts are anticipated. The probability of aircraft collisions with individuals of these species would increase as a result of realignment as discussed above for raptors. Any loss of bald eagles or peregrine falcons is unlikely but would be considered significant. Effects on ferruginous hawk populations are also possible but cannot be quantified. A decline in population size, although not likely, could result in federal listing.

M4.4.6 Mitigations

Measures that would reduce project impacts on biological resources include:

- o The use of treated wastewater to create wetland and riparian habitat (e.g., a perennial stream segment) off-base, particularly riparian woodland.
- o An information program for MHAFFB personnel and all other project-related in-migrants of BLM seasonal restrictions on recreational activities that could disturb raptor nesting.
- o Analysis of bird-aircraft strike data at regular intervals (at least once a year) to determine how many raptors are being affected by season. The data obtained could be used to predict population effects through modeling.
- o A program to monitor raptor nesting success, dispersal, and abundance along the flight path to and from the runways at MHAFFB and compare to a control site. An agreement with BLM should be developed to mitigate any significant impacts identified as a result of the monitoring program.
- o All new federally funded construction sites at the city of Mountain Home related to realignment at MHAFFB should be surveyed (BLM Class II survey) by a qualified botanist for the presence of suitable habitat for montane peppergrass or federal candidate species. The resultant data would enable planners to mitigate or avoid impacts to these species.
- o Assistance to the Idaho Department of Fish and Game in establishing an office or training program for the Mountain Home area to enforce game laws and to educate realignment-generated in-migrants about Idaho game laws.
- o The development and implementation of a BLM-coordinated recreational effects monitoring program for biological resources occurring in recreational areas and restrict uses if negative effects are documented.

M4.5 CULTURAL RESOURCES

M4.5.1 Regulatory Setting

Numerous federal laws and regulations require federal agencies such as the Air Force to consider the effect of a proposed action on cultural resources. Based on these laws and regulations, the Air Force issued counterpart regulations concerning cultural resources. These laws and regulations stipulate a process for compliance, define the responsibilities of the federal agency proposing the action (e.g., Air Force), and prescribe the relationship among other involved agencies (e.g., BLM, ACHP). Compliance with the requirements of these laws, regulations, and processes involves three fundamental steps: (1) identification of significant cultural resources potentially affected by a proposed undertaking; (2) assessment of the impacts of the proposed undertaking on those resources; and (3) development and implementation of measures to eliminate or mitigate adverse impacts. Table M4.5-1 lists the most pertinent laws and regulations guiding the compliance process.

M4.5.2 Issues and Concerns

The realignment involves an increase in numbers of aircraft and personnel at MHAFB and the construction of additional support facilities at MHAFB. The primary issues addressed because of these actions are:

- o Potential disturbance or destruction of historic and prehistoric archaeological resources during construction of new facilities and infrastructure at MHAFB.
- o Potential disturbance of architectural resources during the modification and repair of existing buildings at MHAFB.
- o Potential indirect impacts of realignment-induced population growth. Specific issues focus on impacts resulting from increased residential and commercial construction and increases in vandalism, illegal excavations and artifact theft, and inadvertent disturbance of cultural resources from recreational activities.
- o Potential indirect impacts of increased flight activity at MHAFB.

M4.5.3 Significance Criteria

Because this document is an EIS and the terms "significance" and "significant" carry special connotations, it is necessary to clearly define the manner in which these terms are used relative to

Table M4.5-1

CULTURAL RESOURCE LAWS AND REGULATIONS

<i>Law/Regulation</i>	<i>Primary Purpose</i>
National Historic Preservation Act (1966)	Establishes National Register of Historic Places; defines Section 105 process requiring federal agency to consider effects of an action on cultural resources on or eligible for the National Register.
Executive Order 115903 (1971)	Directs land-holding federal agencies to identify and nominate cultural resources to the National Register.
36 CFR 800	Defines the standards and requirements of the Section 106 process.
American Indian Religious Freedom Act	Defines Native Americans rights to exercise traditional religions and access to ceremonial sites.
Archaeological Resources Protection Act (1979)	Defines civil and legal penalties for illegally obtaining archaeological resources on federal or Native American lands.
36 CFR 60	Defines criteria for evaluating eligibility of cultural resources to the National Register.
Programmatic Memorandum of Agreement among U.S. Department of Defense, Advisory Council on Historic Preservation, and National Council of State Historic Preservation Officers (1986)	Establishes a basic program for documentation and treatment of World War II military buildings and facilities on lands held by the Department of Defense.

cultural resources. The impact assessment process, as outlined in federal cultural resource laws and regulations, centers on two types of significance: cultural resource significance and impact significance. As described below, these two types of significance are tightly integrated with regard to cultural resources.

Resource Significance

The significance of prehistoric-archaeological, historic, and architectural resources is evaluated based on the criteria for inclusion in the National Register of Historic Places as defined in 36 CFR 60.4 and in consultation with the State Historic Preservation Officer. According to these criteria, the quality of significance is present in districts, sites, buildings, structures, and objects that:

- a. are associated with events that have made a significant contribution to the broad patterns of history, or
- b. are associated with the lives of persons significant in the past, or
- c. embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, possess high artistic value or represent a significant and distinguishable entity whose components may lack individual distinction, or
- d. have yielded, or may be likely to yield, information important in prehistory or history.

Criterion d forms the basis for evaluating the significance of most prehistoric and historic archaeological sites. For some historic archaeological resources (e.g., battlegrounds, historic event sites, trails), criteria a and/or b apply. Architectural resources commonly are significant because they meet criterion c, although many are also associated with important historical events (criterion a) or people (criterion b).

Cultural resources determined to be significant according to National Register criteria are termed historic properties. To be listed in or determined eligible for listing in the National Register, a property must meet at least one of the above criteria and must possess integrity -- an attribute defined as the authenticity of a property's historic identity as evidenced by the survival of physical characteristics that existed during the property's historic or prehistoric occupation or use. Included are integrity of location, design, setting, materials, workmanship, feeling, and association. If a property retains the physical characteristics it possessed in the past, it has the capacity to convey information about a culture or people, historical patterns, or architectural or engineering design and technology.

Evaluating the significance of Native American cultural resources requires consultation with affected tribal groups to develop relevant defensible criteria for establishing the relative importance of tangible and intangible resources. Certain categories of tangible Native American cultural resources, such as ancestral settlements or petroglyph and pictograph sites, may be afforded protection through their eligibility for the National Register. However, natural features such as biota and spiritual locations are not addressed in historic preservation legislation unless their historic use can be documented. Such features, as well as the more intangible resources that contribute to the uniqueness and maintenance of Native American cultures and communities, are afforded protection under the American Indian Religious Freedom Act.

Impact Significance

To warrant consideration with regard to project impacts, an evaluation must establish the significance of a cultural resource, and thus define it as an historic property. A project results in impacts to an historic property when it alters the property's characteristics, including relevant features of its environment or use, that qualify it for inclusion in the National Register. Impacts may include:

- o Physical destruction, damage, or alteration of all or part of the property.
- o Alteration of the character of the property's surrounding environment that contributes to the property's qualification for the National Register.
- o Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting.
- o Neglect of a property resulting in its deterioration or destruction.

Direct and indirect impacts are considered significant (adverse) if they result in loss, alteration, or destruction of properties listed on or determined eligible for listing on the National Register or considered important to contemporary Native American groups.

M4.5.4 Methodology for Analyzing Impacts

Direct impacts are those resulting from ground disturbance directly associated with the layout, construction, operation, and maintenance of new or modified on-base facilities and infrastructure. These actions can potentially disturb or destroy cultural resources. Indirect impacts primarily result from the effects of project-induced population growth. Such growth can result in increased off-base residential and commercial construction as well as increased recreational activities which can disturb or destroy cultural resources. Common agents of indirect impacts include housing developments, ORV

activities, vandals, and artifact collectors. Indirect impacts can be as great or greater than direct impacts.

Direct impacts were assessed by (1) identifying the types and locations of all project components (e.g. on-base facilities, roads and utilities); (2) comparing these locations with known cultural resource locations, areas considered archaeologically sensitive, and disturbed locales; (3) assessing the potential significance of cultural resources that may be affected; and (4) evaluating the potential for adequate mitigation.

Indirect impacts were assessed by considering areas that might be affected as a result of realignment-induced population growth. Procedures included (1) estimating the expected level of population growth, (2) identifying areas that might be affected by new residential and commercial construction, (3) identifying areas that might be affected as a result of greater recreational use due to population growth, (4) comparing these locations with the locations of known cultural resources and areas considered archaeologically sensitive, (5) assessing the potential significance of resources that may be affected, and (6) evaluating the potential for adequate mitigation.

M4.5.5 Impact Assessment

M4.5.5.1 Direct Impacts on MHAFB

Prehistoric and Historic Archaeological Resources

Base realignment will result in a net increase in personnel and aircraft at MHAFB. Supporting this increase will require construction of a wide range of new facilities and infrastructure systems including hangars, a munitions magazine, military family housing units and a dormitory, storage facilities and a warehouse, and other structures associated with aircraft maintenance and operations (see Chapter 2.0). These construction projects will result in disturbance to approximately 350 acres. New roads to some of these may be required. A recent study indicates the existing MHAFB water system must be upgraded with larger pipes, new wells, and storage facilities, and a new water pipeline system (McGranahan, Messenger Associates 1989). Such realignment-related construction will result in ground disturbance with the potential to disturb or destroy significant prehistoric and historic archaeological resources.

However, this potential is considered low for three reasons. First, most on-base construction will occur in previously disturbed areas that possess a negligible potential to contain intact, significant prehistoric and historic archaeological resources. Second, the base occurs within an area characterized by a low-density of prehistoric and historic archaeological resources (see section M3.5.3.5). Third, existing data suggest that the types of resources most likely to occur on base (i.e., small, surface prehistoric lithic

scatters and historic can scatters and dumps) rarely constitute significant resources worthy of further protection.

No new facilities are planned for the Small Arms Range. Since existing facilities occupy already disturbed portions of the range, increased range use (if any) is predicted to result in negligible impacts to archaeological resources.

Architectural Resources

Because realignment will not involve modification or demolition of the World War II-era buildings or any other historic structures located on MHAFB, no impacts to architectural resources are anticipated.

Native American Resources

Lithic scatters are the only type of Native American resource that might be expected to occur on MHAFB (and Small Arms Range) due to the area's lack of sensitivity (see above). The low probability of finding any intact resources on the base, coupled with the limited cultural values usually placed on lithic scatters by Native Americans, suggests that significant impacts are unlikely. If impacts do occur, mitigations described in section M4.5.6 (also see Appendix G) should reduce them to insignificant levels.

M4.5.5.2 Indirect Impacts In and Near the City of Mountain Home

Prehistoric and Historic Archaeological Resources

Construction of off-base housing to accommodate realignment-generated demand could disturb prehistoric and historic archaeological resources. Based on local building patterns (personal communication, Ross 1989), the off-base housing could result in the indirect disturbance of about 150 to 200 acres of land. At this time it is not possible to precisely predict where this construction might occur but the Highway 67 corridor between MHAFB and the city of Mountain Home vicinity constitutes a probable location for the new homes. Data presented in sections M3.5.3.4 and M3.5.4.4 (and Appendix G) indicate that this area is characterized by a low cultural resource density. Given that the construction of off-base housing will probably disturb no more than 150 to 200 acres, impacts to historic or prehistoric archaeological sites are unlikely. Should they occur, however, standard procedures specified in section M4.5.6 (see Appendix G) should be sufficient to reduce impacts to an insignificant level.

The anticipated increase in population may require construction of additional public facilities such as a fire station or police station, although their size and locations are impossible to predict at this time. If

constructed in the downtown core, an area that may contain buried historic archaeological resources, the potential for significant indirect impacts exists. Mitigation measures described in section M4.5.6 should reduce any impacts to insignificance, however.

Architectural Resources

A realignment-induced increase in population may result in the modification or demolition of some historic structures in the city of Mountain Home, nine of which are listed on the National Register. Many other historic residences and commercial structures potentially represent significant, but undocumented, resources. Population growth will undoubtedly spur additional commercial development that could adversely affect these and other historic structures. For example, an increase in on- and off-base population could result in the modernization of the old hotels as well as other historic structures. Modifications of this sort can adversely affect those qualities that make local structures eligible for listing on the National Register of Historic Places. Demolition of existing structures to make way for new developments could also occur. However, procedures described in section M4.5.6 (and Appendix G) should be sufficient to reduce these impacts to an insignificant level.

Native American Resources

The limited nature of Native American sites expected in and near the city, coupled with the low potential for impacts to such resources, suggest that impacts will be either non-existent or mitigatable to insignificant levels.

M4.5.5.3 Regional Indirect Impacts

Prehistoric and Historic Archaeological Resources

A potentially significant increase in indirect impacts to cultural resource from recreational use of the environment is expected as a result of realignment-induced population growth. Currently, ORV users and other recreationists (e.g., hunters, hikers) as well as vandals and "pot hunters" (illegal artifact thieves) are adversely affecting large numbers of cultural resources throughout southwestern Idaho, a trend that may be exacerbated by the influx of more people into the region. Combined, both sets of agents have adversely affected the resource base (e.g., Huntley 1982). For example, the entire Bruneau/Jarbridge River complex is rich in cultural resources, particularly cave sites that often contain unique, well-preserved deposits not found elsewhere. The BLM (1985a) estimates that 80 percent of these caves have been "potted" and partially damaged while the other 20 percent have been destroyed.

Although they have little systematically collected data on these types of impacts, BLM archaeologists (personal communication, Wyatt and Jenks 1989) estimate that inadvertent disturbance of sites through

ORV use and general recreation activities represent the most serious threat to cultural resources as a result of base realignment. Despite BLM designation of special areas dedicated to ORV users, unauthorized use of other areas is common and serious impacts to cultural resources occur (personal communication, Wyatt 1989). Because of the popularity of ORV use and other recreational activities, the impacts are expected to increase as a result of realignment-induced population growth.

Such growth will be unlikely to engender a significant increase in pot-hunting since individuals engaged in artifact theft are usually long-term residents of a region (Lyneis et al. 1980; personal communication, Wyatt 1989). Alternatively, even a slight increase in vandalism due to population growth may result in significant impacts; vandals often target important and unique cultural resources such as rock art and caves.

In addition, increased recreational use of the environment heightens the potential for brush fires that could affect cultural resource in at least three ways: (1) fires can break or otherwise alter artifacts; (2) fires expose sites, thus making them more susceptible to vandalism; and (3) BLM fire-rehabilitation projects can mechanically disturb archaeological sites (personal communication, Wyatt 1989).

It is not possible to accurately predict where recreational impacts will occur but data from section M3.8.6 suggest that outdoor recreation will concentrate within 2 hours driving time of MHAFFB and the city of Mountain Home. Designated recreational facilities in this area are predominantly located along or near drainages, including the Snake River (C. J. Strike Reservoir, Three Island Crossing, Malad Gorge, the Hagerman Fossil Beds National Monument, Thousand Springs), the Bruneau River (Bruneau Dunes State Park), and the south fork of the Boise River (Anderson Ranch Reservoir). These drainages contain the highest density and diversity of recorded sites in southwestern Idaho. In addition, ORVs provide access to more remote areas (e.g., Cave Draw, The Arch, Bruneau Canyon, the Owyhee Front) that contain abundant historic and prehistoric archaeological resources. Impacts in these and other sensitive areas can be expected to increase as a result of realignment-induced population growth.

Architectural Resources

A realignment-induced increase in recreation is likely to result in negligible impacts to architectural resources because most of these highly visible, vandalism-prone resources are located on private lands (Young 1984) and their proximity to occupied dwellings offers sufficient protection.

Native American Resources

Significant impacts to Native American resources are expected to occur as a result of increased recreational activities and vandalism in the region. As noted above, general recreation activities affect

a wide range of resource types and areas potentially important to Native Americans. Vandals are particularly damaging because they often concentrate on such highly sensitive resources as caves and rockshelters, rock art, as well as villages and other habitation sites. Effective control of these activities will be difficult due to the large area that may be affected. As a result, mitigations proposed in section M4.5.6 are expected to considerably reduce, but not eliminate, significant impacts to Native American resources.

Impacts of Increased Flight Activity at MHAFB

The increase in the number of aircraft stationed at MHAFB will result in more flight activity in the immediate vicinity of the base. Since the increased activity will not result in ground disturbance, no impacts to prehistoric and historic archaeological resources are expected.

The potential for vibration impacts to architectural resources is negligible. Despite an increase in the flight activity and increase in the ambient noise levels, the flight activity will not produce noise-induced vibrations sufficient to damage the structures on or off base. Noise analyses establish that the probability of damage to relatively fragile structures, especially poorly constructed and poorly maintained wood-frame buildings, is estimated to be less than 0.3 percent even when the building is directly overflown at 200 feet AGL. None of the on-base architectural resources (i.e., World War II) buildings lie directly under the flight path. All off-base architectural resources within the ROI occur in the city of Mountain Home, several miles away from the limits of the noise and vibrations produced by flight activity.

Data suggest that the ROI and its vicinity have a very low potential to contain Native American sacred or ceremonial sites. Therefore, noise produced by increased flight activity is unlikely to affect Native American resources.

Summary

The realignment, specifically the increase in population, will result in an increased use of the environment which will have significant impacts on cultural resources. Impacts to prehistoric and historic archaeological resources in the ROI should be limited or non-existent but architectural resources in the city of Mountain Home could be affected by modernization and new construction. The highest frequency of significant impacts are likely to occur outside of population centers as a result of increased recreational use of the environment. Vehicular disturbance (ORVs) to prehistoric and historic sites and vandalism are expected to increase, perhaps dramatically so.

M4.5.6 Mitigations

Specific mitigation measures for cultural resources will be identified in a Programmatic Agreement (PA) signed by the Air Force, ACHP, the SHPO, and the BLM. This brief, legally binding document will carefully outline the basic processes that will be used to consider the effects on cultural resources resulting from realignment of MHAFB as well as any related actions (e.g., proposed expanded range). The processes of a PA mirror those required by Section 106 of the National Historic Preservation Act; when executed (i.e., signed), the PA will conclude the Section 106 process.

The PA will not, however, define the specific methods and procedures to be used in the cultural resource studies conducted for the program. Rather, for description of the methods and procedures, the PA will reference an associated document: the Cultural Resource Management Plan (CRMP).

Appendix G provides a detailed discussion of the PA, CRMP, and mitigation measures. The basic tasks, processes, and stipulations that would be addressed in the PA and the CRMP include: identification and evaluation of the significance of cultural resources directly affected by realignment; mitigation measures (e.g., avoidance, data recovery) for significant cultural resources directly affected by realignment; development and implementation of a monitoring and treatment program for cultural resources subject to indirect impacts; consultation with Native Americans; and establishment of standards for cultural resource studies.

M4.6 VISUAL RESOURCES

M4.6.1 Regulatory Setting

The following regulation provides guidance for assessment of impacts to visual resources resulting from realignment of MHAFB.

Federal Land Policy and Management Act of 1976, represents the "organic" law defining the mission of the BLM. It requires the BLM to inventory and manage all resources within the lands it administers. Importantly, this act specifically requires consideration of visual resources.

Other related regulations and guidelines are described in section M4.8, Land Use.

M4.6.2 Issues and Concerns

Realignment of MHAFB raises three primary issues and concerns with regard to visual resources.

- o Changes in the visual landscape of the base resulting from on-base construction of structures and facilities.
- o Alteration of the visual setting of the city of Mountain Home and its vicinity due to off-base construction of housing and commercial developments prompted by project-induced population growth.
- o Potential degradation of the visual qualities of the landscape on and near the base as a result of a net increase in aircraft landings and take-offs.

M4.6.3 Significance Criteria

Evaluation of potential impacts to visual resources requires determination of the extent to which the planned actions (e.g., house construction) contrast with the existing visual setting and the degree to which the modification to the setting is noticeable. The degree of contrast provides the basis for identifying the significance of the impact. Significant impacts are defined as those resulting from actions that are visually incompatible with the existing visual setting and from actions which are obtrusive to or dominating the existing visual landscape.

M4.6.4 Methodology for Analyzing Impacts

Both on-base and off-base visual impacts may result from realignment activities. Although MHAFB is owned and managed by the DOD, all lands in and around the ROI have been classified by the BLM under the Visual Resource Management (VRM) system. This system defines a systematic approach for inventorying and evaluating scenic quality and for setting management objectives concerning the visual resources in a specific area. This approach classifies the visual qualities of the landscape and provides a basis for assessing the effects of projects on those qualities. The approach identifies a number of variables such as type of landforms, variety of vegetation, dominance of water, contrasts of color, influences of adjacent scenery, scarcity of features, and impacts from cultural modification to classify the existing visual conditions of an area. The contribution of each variable is quantified, resulting in an overall score for the visual setting. The VRM classifications provide a standard for evaluating potential visual impacts. VRM classes range from I to IV:

- o *Class I* represents unique areas where the existing character of the landscape is preserved. Any contrast (e.g., modification to the landscape) created within the characteristic visual landscape by management activities must not attract attention. This classification applies to wilderness areas, wild and scenic rivers, and other Congressionally designated areas.
- o *Class II* applies to areas where a project may result in a contrast to the natural setting that may be seen, but should not be evident. The management objective of this class is to retain the existing character of the landscape. Any changes to the basic elements -- form, line, color, and texture -- caused by an undertaking should be low and not evident to the casual observer.
- o *Class III* defines areas where contrasts to the basic landscape caused by projects or management activities may be evident, but should be moderate and remain subordinate to the existing setting. The management objective of this class is to partially retain the existing character of the landscape.
- o *Class IV* identifies areas where project- and management-related contrasts to the characteristic landscape attract attention. This class permits management activities and projects which require major modification of the existing character of the landscape. Changes in characteristic landscape may dominate the focus of the viewer's attention.

The VRM classification system also includes two other classes, Rehabilitation and Interim. The first of these classes applies to areas whose visual resources are need of rehabilitation. The degree of

rehabilitation is determined through the Resources Management Program (RMP) process which assigns a desired VRM classification as a goal to be achieved. Interim Class is used for areas where no VRM class has been designated.

Although most of the land within the ROI is not owned and managed by the BLM, the BLM's VRM system provides a basic framework from which to assess potential visual impacts. Therefore, a systematic visual analysis was performed in the field (see section M3.6) which incorporated the assigned VRM classifications for the ROI as a basis for evaluating project impacts. After completing a desktop analysis of the area, a variety of representative viewpoints were identified, photographs were taken from these viewpoints, viewing direction and topographical features were noted, and distances to subjects were recorded. The visual analysis of the city of Mountain Home was more generic since the possible locations and actual details of the housing development are unknown at this time. Photographs were taken of the town to identify its visual character and to assist in evaluating potential impacts.

M4.6.5 Impact Assessment

The activities associated with the realignment of MHAFB that may affect visual resources consist of construction of facilities and housing on base, project-induced development in the vicinity of the base, and increased aircraft activity.

The VRM classification for the area within and surrounding MHAFB is Class IV, indicating that cultural (e.g., development) modification is the dominant visual characteristic in the area. The area along and buffering Highway 67 leading to MHAFB, the city of Mountain Home, and Highway 51 have been classified as Class III. This classification indicates that cultural modification is evident, but future activity (e.g., building) should remain subordinate to the existing visual landscape. The small portion of the ROI which includes the Snake River is designated as Class II; any change to the existing character of the landscape should be low and not evident to the observer.

M4.6.5.1 On-Base Construction Impacts

The expansion of facilities on base will include the construction of a number of buildings and infrastructure improvements. These projects, as described in detail in Table 2.1-3, include a 40,000-square-foot open munitions pad, a 5,000-square-foot K-Span storage building, a 59,000-square-foot aircraft engine repair shop, and a 42,000-square-foot 208-person dormitory are planned for portions of the base containing numerous similar buildings and facilities. Of the remaining construction projects, only those planned for the northernmost part of the base were considered to possess the potential to result in visual impacts since no existing buildings or trees screen views of this area from Highway 67 or Main Avenue (on-base). These projects include 432 units of MFH and a two-bay auxiliary fire station.

However, as described below, the visual analysis demonstrated that on-base construction will not result in significant impacts to the visual setting. Therefore, these projects will not alter the existing visual setting of the base and will not be noticeable from off-base.

The off-base viewpoints used for the in-field visual analysis are shown in Figure M4.6-1. Section M3.6 describes on-base views and visual resources. Figure M4.6-2 shows the view from VP2, the intersection of Highways 51 and 67, looking southwest to MHAFB. VP2 is approximately 6 miles straight line distance from MHAFB. The topography rises in the direction of the base, screening views of any structures on base. No views of the base are available east of VP2. Along Highway 67, the base is not consistently visible until VP4.

Figure M4.6-3 is a view of the base from VP4 looking south from the intersection of Highway 67 and Grand View Road. The MHAFB Visitor's Center is the building shaded by the trees in the middle of the picture. The developed center of the base lies in the distance behind the visitors center. The on-base watertower is visible from VP4, although at a distance of approximately 2.5 miles away. This 100-foot high structure is subordinate to closer structures.

The view due east to the base from VP6 (the C.J. Strike Dam Road) is presented in Figure M4.6-4. This viewpoint is 3.6 miles from the western boundary of MHAFB. The base is not discernable, although some type of structure is barely visible in the distance. Traveling northeast along Highway 67 in the direction of the base, only the water towers are intermittently visible for a distance of 1.8 miles east of VP6 after which topographic screening blocks any views. At 2.3 miles east of VP6, a small rise in the terrain permits only a very brief view of some of the trees and towers on base.

As these photographs establish, new structures and facilities constructed in association with the realignment will result in negligible visual impacts from off-base viewpoints along Highway 67. Moreover, most of the new structures will not even be visible. The new structures and facilities will be compatible with the existing uses of MHAFB and will not change the visual character of the landscape. Although additional structures and facilities might reduce the dispersed appearance of the base, but preservation of existing open space and recreation areas will ensure that MHAFB's visual characteristics remain unchanged. Due to the topography of the area, none of the base structures will be visible from the Snake River/C. J. Strike Reservoir area. Construction of buildings and facilities would not modify the existing VRM classifications on-base or in the immediate vicinity. Therefore, impacts from the on-base construction to the visual resources in areas surrounding the base, along Highway 67, and along Grand View Road would be insignificant.

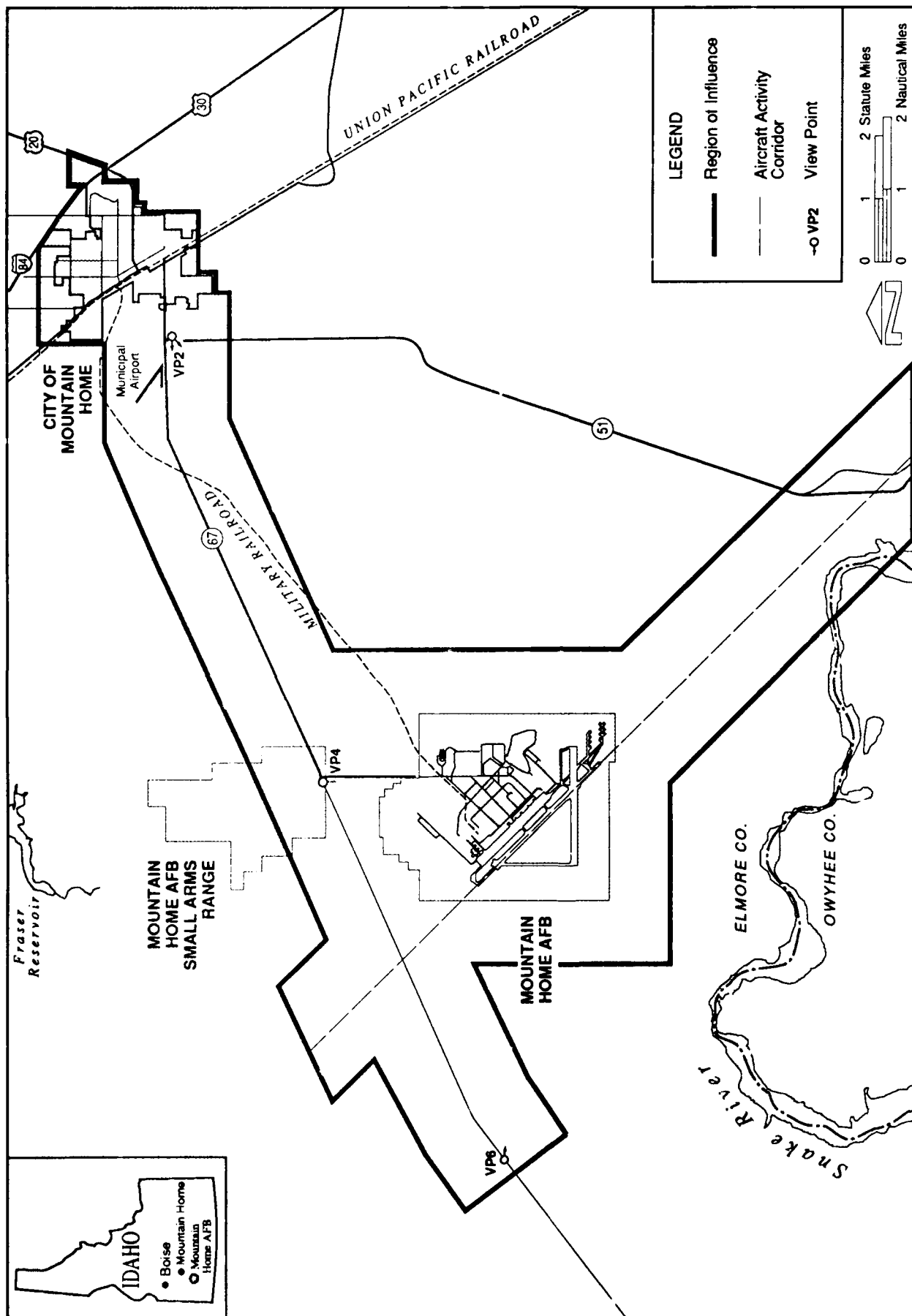


Figure M4.6-1

LOCATION OF OFF-BASE VIEWPOINTS USED FOR VISUAL RESOURCES ANALYSIS



Figure M4.6-2 (VP2) Traveling along Highway 67 toward the base of Mountain Home, the view is unobstructed to the broad plains. The focal point sensitivity along the road directs the viewer's attention southwest. At the junction of Highway 67 and 51 (as shown), there is no visual impact from the structures at Mountain Home AFB.



Figure M4.6-3 (VP4) From the junction of Highway 67 and the entrance road to Mountain Home AFB, the flat terrain permits distant views of prominent on-base features (i.e., water towers). The developed, more industrial area of the base (as shown in the viewers' background) is approximately 2.5 miles south of the highway. Off-base buildings and utility lines, shown here in the fore and middle ground, compete with the distant water tower for viewers attention.

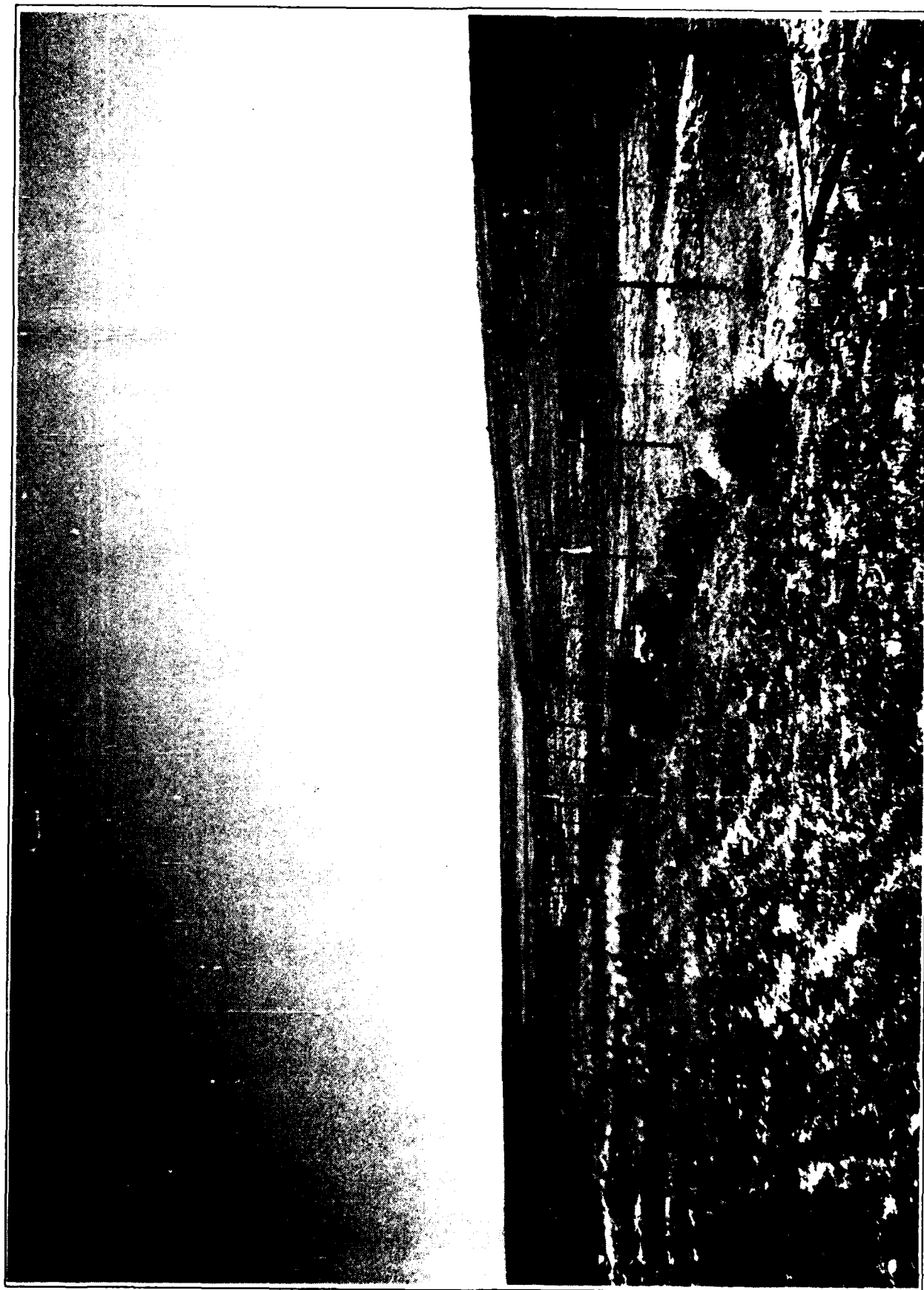


Figure M4.6-4 (VP6) West of the base, expansive views are screened by slight rises in the terrain. Traveling northeast along Grand View Road, intermittent yet oblique views of the base are available. At the junction with C.J. Strike Dam Road (as shown), the base is not noticeable.

M4.6.5.2 Realignment-Induced Growth Impacts

Although realignment-induced population growth is predicted to cause a demand for off-base housing, infrastructure enhancement, and commercial development in the city of Mountain Home, the location, size, type, and number of required structures remains unknown at this time. Since the city and its environs are within a zone defined as VRM Class III, construction of new housing and facilities may result in potentially significant visual impacts if such development is not subordinate to the existing visual landscape. However, as described in section M4.6.6, mitigation measures can reduce the impacts to insignificance.

M4.6.5.3 Aircraft Activity Corridor Impacts

The VRM classification for the aircraft corridor is predominantly Class IV, while the sections crossing Highway 67 and 51 are Class III and the small area over the Snake River is Class II. Using the Class II definition, any changes to the character of the landscape should be low and not evident. Since aircraft activity is a part of the existing visual landscape, an increase in visible aircraft activity would not modify the existing VRM classification.

Although no changes to management activities of this area will occur, a significant increase in aircraft activity at MHAFB could potentially affect the visual resources of the on-base residential areas and along Highway 67 and Highway 51 (just north of the section that crosses the Snake River). The number of flight operations at MHAFB will increase substantially after realignment. Most of this increase will be attributable to F-4 aircraft. In comparison with aircraft currently using the base, the F-4 is the smallest in size, yet it has a visible exhaust plume (see Appendix A).

Figure M4.6-5 simulates the visual impact of F-111 aircraft overflight at 160 feet AGL. As the figure illustrates, the visual impact of the aircraft becomes insignificant at distances greater than 1 mile. Since the on-base residential areas are at least 1.5 miles from the runway, the impact to these areas will be insignificant.

It is difficult to determine the duration that an aircraft would be in the viewshed of travelers along either Highway 67 or 51. Since most of the increased aircraft activity will be attributable to the F-4 aircraft, which will predominantly be used for training, a variety of mission instructions could be issued. Therefore aircraft could be in a travelers view for a matter of seconds or minutes depending upon the mission.

However, the majority of visible aircraft activity will occur on Runway 30, where takeoffs typically are to the northwest, and most landings are approached from the southeast direction. At the point where an aircraft would cross Highway 67, it would probably be at 1,000 feet AGL and traveling at a speed of

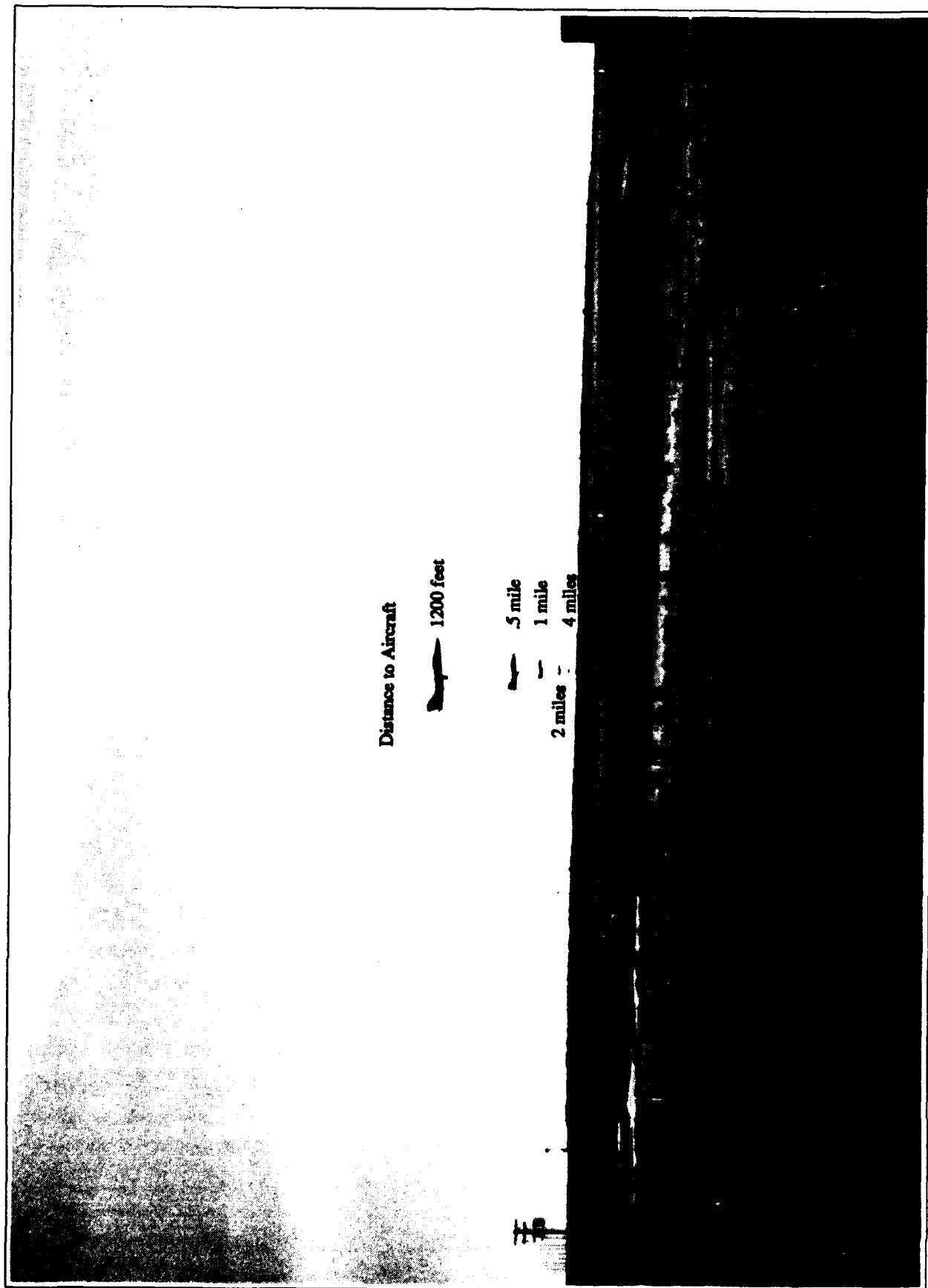


Figure M4.6-5 Simulation of an F-111 aircraft overflight at 160 feet AGL. At a distance of 1200 feet, the aircraft dominates the view. As the distance between the aircraft and the viewer increases, the features in the foreground begin to compete for visual attention with the aircraft. At a distance of 4 miles the visual impact of the aircraft is negligible. (Since an F-4 aircraft is 13 feet shorter than the F-111, it's noticeability at greater distances would decrease proportionally.)

350 knots (i.e., 400 MPH). At this speed, the aircraft would cover 1 mile in 9 seconds. At a distance of one mile, and assuming a direct takeoff climb out, there is a potential for the aircraft to be in view for 27 to 30 seconds. On Highway 51, an aircraft would most likely pass over at a height of 1,500 feet AGL and would be traveling approximately 250 knots (i.e., 300 MPH). At this speed, the aircraft would cover 1 mile in 12 seconds and could be in view for 36 to 40 seconds.

Although special mission requirements could increase the viewing duration, the average viewing time for travelers along Highways 67 and 51 is relatively small. Given the level of existing aircraft activity in the area and the fact that neither highway has a scenic designation, the increase in aircraft activity would result in insignificant visual impacts to travelers.

M4.6.6 Mitigations and Recommendations

Planned on-base construction will not modify the existing VRM class or visual landscape of the base and its immediate vicinity. As such, visual impacts resulting from this element of the realignment will be negligible and will not require mitigation.

Although outside the Air Force's responsibility, community-oriented mitigation measures to reduce off-base visual impacts to insignificance include the following:

- o Develop in areas targeted for residential or commercial expansion and avoid areas targeted for open space or recreation.
- o Design additional residential units to be compatible with the visual character of the area.
- o Promote rehabilitation of historic structures.
- o If any development is proposed near the base, the issues of encroachment and land use compatibility will require evaluation.

The increase in aircraft takeoffs and landings at MHAFB will have negligible visual impacts and will not require mitigation measures.

M4.7 EARTH RESOURCES

M4.7.1 Regulatory Setting

The following is a summary of laws, general policies, and regulations that govern earth resources in the state of Idaho and pertain to the base realignment. This regulatory framework also provides the guidelines and management practices to mitigate or prevent adverse impacts to these resources.

Federal Statutes and Regulations

Mining Law of 1872, sets the guidelines for staking mining claims on locatable mineral deposits (i.e., gold, silver, lead, asbestos, mica, fluorspar, etc.).

43 CFR 3000 Series, pertains to minerals management including exploration and mining operations (43 CFR 3809).

Federal Cave Resources Protection Act of 1988, provides measures to secure, protect and preserve significant caves on federal lands.

Historic Sites Act of 1935, provides the basis for the establishment of National Natural Landmarks which represent "outstanding examples of landforms, geological features, etc., or fossil deposits."

State Laws of Idaho

Idaho Surface Mining Act of 1971, governs all surface mining in Idaho and provides guidelines for land reclamation.

Idaho Dredge and Placer Mining Act of 1954, administers the mining of placer deposits and requires reclamation plan filing.

Idaho State Code, Chapter 70, section 18-7035, proscribes damage to caves and their contents.

Idaho State Code, Chapter 181, sections 67-4119–67-4122, protects vertebrate paleontological resources as well as other resources.

M4.7.2 Issues and Concerns

Realignment activities at MHAFB include construction of housing facilities on and off base to accommodate in-migrating personnel and their families and population-induced growth. Maintenance and support facilities will also be needed for additional aircraft. The issues pertaining to earth resources resulting from this action include:

- o Soil erosion due to construction activities.
- o Increased demand for road and facility construction materials (e.g., sand and gravel).
- o The effects of increased population and recreational use of the area on cave and paleontological resources.

M4.7.3 Significance Criteria

Exposed surface soil materials are prone to erosion by wind and water. Soil erosion would be the primary impact of realignment on soil resources. The loss of soil is evaluated in tons (soil) per acre with a loss of 20 percent of the soil horizon being a significant adverse effect for the disturbed soils.

Evaluation of the significance of impacts on mineral rights and economic deposits is based on the economic potential of the deposits, the extent or availability of the deposit, and the degree to which realignment-related actions will potentially deplete the deposits. Adverse impacts result from actions that substantially deplete the known and expected reserves of a particular mineral relative to its occurrence on a local, state, national, and world basis.

Significant caves consist of those that possess value for scientific, educational, or recreational purposes, thereby warranting protection under state and federal law. Actions that alter or disturb such caves are considered adverse impacts.

To evaluate impacts to paleontological resources, it is necessary to identify the scientific significance of the resource and the location, type, and extent of disturbance generated by the project. In general, paleontological resources are considered significant if they are rare or unique or if they have scientific value (i.e., can yield information important in understanding the past). Rarity and uniqueness presupposes that the resource is uncommon or it possesses a characteristic that is uncommon. A resource may belong to a species not usually discovered or it may be a particularly well-preserved specimen of a species known from less-intact individuals elsewhere. The assessment of scientific value of a resource takes into consideration important characteristics such as age, assemblage association, geological setting, type, rarity, and condition (preservation). The evolution of species, environmental

conditions, species migration, and habitat diversity may be investigated using well-preserved fossils of several species within a single geological stratum. The chronological association of strata within a region may be used to investigate changes in species adaptation through time. In addition, paleontological resources may be significant when associated with another resource (e.g., late-Pleistocene fauna associated with archaeological remains) that can contribute to our knowledge about adaptations of early human inhabitants in North America. Paleontological resources are significantly affected if their characteristics are altered. Potential effects include the destruction or deterioration of the resource or the unscientific removal of the resource from its natural environment.

M4.7.4 Methodology for Analyzing Impacts

Analysis of the impacts to earth resources resulting from realignment activities at MHAFB employs the following steps: (1) identification of locations where the realignment activities may influence or affect earth resources; (2) general examination of specific activities necessary to facilitate the realignment (i.e., construction); and (3) assessment of the impacts on earth resources using the established significance criteria.

M4.7.5 Impact Assessment

Both direct and indirect impacts of an action can affect earth resources. Direct impacts result from ground-disturbing activities such as construction of buildings, roads, etc. Indirect impacts are related to increased population growth and additional use of an area.

On-Base Impacts. Activities planned at MHAFB include the construction of a number of additional facilities to support an increase in aircraft and personnel. These facilities include aircraft hangars, housing, storage areas, and a warehouse, among others. New roads and improved water lines will generate ground disturbance in addition to the above-mentioned construction activities.

Off-Base Impacts. Indirect impacts associated with the MHAFB realignment are anticipated to result from realignment-related population growth. These impacts may occur as a result of additional off-base housing construction, commercial development in the city of Mountain Home, and an increase in recreational use of the surrounding area. In addition, construction activities associated with realignment will increase the demand for sand and gravel.

Geology

The realignment of MHAFB will not adversely affect economic deposits or unique geologic features on base, in the city of Mountain Home, or in the region. Realignment will increase the need for sand and gravel for construction of new roads and facilities as well as for maintenance of existing roads. Since

sources for these materials are abundant in the vicinity of Mountain Home and near the Snake River, the expected demand for sand and gravel resulting from realignment-related construction is unlikely to deplete these resources. Although rock collecting may increase due to greater recreational use of the region, it would not significantly affect mineral resources. Additionally, it is unlikely that realignment will attract individuals interested in staking claims or commercially developing mineral deposits.

Topography

Due to the lack of unique topographical features in the affected areas, site grading activities associated with construction in support of the realignment of MHAFB will not adversely affect the topography of the city of Mountain Home or MHAFB.

Soils

Soils will be disturbed during on-base construction activity and as a result of growth in the city of Mountain Home. Grading of access roads, foundations for new structures, and trenching for water line installation will increase the potential soil erosion. These construction activities will take place over a period of approximately 4 years, thereby limiting the total area disturbed at any point in time. Soil erosion is not expected to create significant effects on the human environment nor will the soil loss be an adverse impact on earth resources. This assessment is supported by the limited disturbed area at any point in time and the small amount of rainfall (8 to 12 inches per year) available to produce surface runoff (0.2 to 2 inches per year) capable of eroding the disturbed soil. In addition, the disturbances will be limited to the period of construction. The small construction sites do not represent a significant potential for soil loss by wind erosion.

Cave Resources

Realignment will not impact cave resources on MHAFB or in the city of Mountain Home because both areas lack caves. However, the region contains hundreds of caves. Although the significance of most of these caves remains unassessed, available data suggest that many may represent scientifically or recreationally important resources (personal communication, T. Weasma 1989). A realignment-induced increase in recreational use of the area may result in indirect adverse impacts to cave resources. Such impacts might include inadvertent disturbance by casual visitors, illegal collection, and vandalism.

Paleontology

The realignment of MHAFB will not adversely affect paleontological resources on MHAFB or in the city of Mountain Home since there are no known fossil localities at either location and a thick mantle

of alluvium and basalt cover potentially sensitive deposits in the area. However, there are several major fossil localities within 50 miles. These fossil localities are within the area anticipated to be used for recreation (see section M3.8.6) by the increased population resulting from the realignment of MHAFFB.

The area south of MHAFFB contains highly visible as well as significant paleontological resources. These resources, as well as potential fossil localities within caves containing late Pleistocene deposits, could possibly be adversely affected by recreational use. The degree of impact caused by recreational use is expected to be greatest at paleontologically sensitive localities in the vicinity of established recreational facilities. These facilities include state parks, reservoirs, and county and municipal parks. Bruneau Dunes State Park, Malad Gorge State Park, Three Island Crossing State Park, and C. J. Strike Reservoir are the most heavily used facilities within the paleontologically sensitive areas (e.g., Chalk Hills, Poison Creek, Glenns Ferry, and Bruneau Formations) along the Snake River Plain that extends to Oregon. Other less intensively used facilities within sensitive areas include picnic areas on the Snake River and the Bruneau River/Sheep Creek WSA, which is available for hunting, fishing, camping, and ORV use. Increased use of these facilities may result in significant indirect impacts to paleontological resources as a result of disturbance and fossil collecting in adjacent deposits.

In addition, realignment-induced demands for sand and gravel potentially may require development of new sources for these materials. Use of such sources, if located within paleontologically sensitive areas, may affect paleontological resources. If the resources are significant, then impacts would be considered adverse. However, it is unlikely that sand and gravel sources in the immediate vicinity of MHAFFB and Mountain Home would contain fossils (see section M3.7).

M4.7.6 Mitigations

Soils

To minimize soil erosion during construction activities, identified as a potential impact of the MHAFFB realignment, site-specific erosion control measures will be implemented for construction areas. These plans should be consistent with Air Force regulations and should include the following:

- o Identifying all potential erosion causes to minimize soil loss.
- o Minimizing the size of the disturbed area associated with each construction site.
- o Stockpiling and protecting from wind and water erosion all soils that have been removed.

- o Landscaping and revegetating disturbed areas.
- o Surfacing (e.g., gravel) roads to minimize erosion.

Cave Resources and Paleontology

Because MHAFB and the city of Mountain Home lack caves, known fossil localities, and accessible sensitive deposits, no adverse direct or indirect impacts to cave or paleontological resources in these areas are expected. Therefore, mitigation measures are not warranted. However, increased recreation associated with MHAFB realignment may produce indirect adverse impacts on cave and paleontological resources within the general region. There are extensive significant fossil deposits on the Snake River, the Bruneau River, and in caves west of MHAFB that may be affected by increased recreational use of these areas. Other caves in the region contain potentially important biological, geological, and archaeological resources.

The following measures could help mitigate potential impacts related to increased recreational use stemming from project-induced population growth:

1. The appropriate public agency should be contacted to identify the significance, current condition, and types of disturbance of known caves and paleontological remains within the identified recreational use area.
2. A monitoring plan for identifying the most susceptible resources and sensitive locations within the recreational use area should be developed.
3. If monitoring identifies significant impacts, the Air Force and the appropriate agency jointly could implement a management plan to reduce adverse impacts to acceptable levels.

M4.8 LAND USE

M4.8.1 Regulatory Setting

The following summarizes the relevant laws, regulations, and plans that govern land-use decisionmaking in the project vicinity.

Federal Land Policy and Management Act (FLPMA) of 1976: Defines the mission of the BLM and requires the BLM to inventory and manage all resources within the lands it administers.

Idaho Recreation 2000 Implementation Plan (1989): Contains BLM management plans and objectives to protect and enhance the recreation resources of Idaho's public lands.

Mountain Home Air Force Base Air Installation Compatible Use Zone (AICUZ) Report (1982): Addresses hazards related to aircraft accidents and noise from aircraft and airfield operations. The report contains specific noise policy and implementation guidelines, as well as descriptions of compatible use zones in the base vicinity that are defined according to noise levels and accident potential.

Elmore County Airport Hazard Zoning Ordinance (1974): Regulates the height of structures and the use of property in certain zones in the vicinity of MHAFB and the city of Mountain Home airport by creating the appropriate zones and establishing the boundaries of such zones.

Elmore County Comprehensive Plan (1980): Contains an inventory of the environmental and socioeconomic resources of the county and establishes goals and objectives for the county's growth and development.

City of Mountain Home Comprehensive Plan (1981): Contains an inventory of the environmental and socioeconomic resources of the city, presents the planning needs to enhance and protect those resources, and provides a comprehensive land use plan map as a guide for future urban growth and development.

M4.8.2 Issues and Concerns

Realignment will include in-migration of military and civilian personnel, construction of housing and support facilities, and increased flight activity. The land use issues and concerns resulting from the realignment are:

- o Increased population will increase the demand for existing outdoor recreational resources (including regional resources and the city of Mountain Home facilities and programs), which may adversely affect levels of service.
- o Increased aircraft operations at MHAFB will increase noise levels in some areas around the base, which may affect land use compatibility.
- o Increased population will increase demand for residential and commercial development in the city of Mountain Home, which could affect existing land-use patterns.

M4.8.3 Significance Criteria

M4.8.3.1 Urban Land

If realignment results in new urban land development that necessitates a change in the proportions of local land use as defined in the current applicable plans, the impact would be considered significant.

M4.8.3.2 Air Base Area Planning and Zoning

If, as a result of realignment, residential, commercial, or other sensitive land uses are included within areas exposed to noise levels higher than 75 L_{dn} or to unacceptable safety hazards, the impact on land use would be considered significant. If realignment results in the inclusion of sensitive land uses within areas exposed to noise levels between 65 L_{dn} and 75 L_{dn}, the impact on land use would be considered potentially significant.

M4.8.3.3 Recreation

If realignment results in an increased recreation demand that exceeds the capacity of the recreation resource, the impact would be considered significant.

M4.8.4 Methodology for Analyzing Impacts

M4.8.4.1 Urban Land

The analysis methodology for urban land is based on review and evaluation of the results of the analyses contained in the *Segmented Housing Market Analysis for Mountain Home Air Force Base* (SAIC 1989) and the socioeconomic analysis contained in section M4.10 of this EIS. These results were

assessed relative to the current city comprehensive plan and zoning to determine if urban development potentially generated by realignment can be accommodated by current planning and zoning.

M4.8.4.2 Air Base Planning and Zoning

Noise (see section M4.3) and safety (see section M4.12) analyses results formed the basis for assessing the effects of realignment on air base planning and zoning. These results were reviewed and evaluated in light of the existing AICUZ report, the current County Comprehensive Plan, and the county airport hazard zoning ordinance to determine if the potential effects of realignment are within the range of effects anticipated by these documents.

M4.8.4.3 Recreation

Analysis of realignment impacts compared projected levels of use to the existing capacities of the recreation resources in the ROI. Potential realignment-related impacts on recreation resources in the ROI are assumed to be a function of the direct and induced population growth in the ROI. For regional attractions such as the Owyhee Front area and the Bennett Hills area, the analysis methodology is based on the following assumptions:

- o most visitors to these areas come from a nine-county area that includes Ada, Elmore, Owyhee, Canyon, Camas, Gooding, Twin Falls, Jerome, and Lincoln counties;
- o the estimated 1989 population of the nine-county area is 419,000 (based on a 1.4 percent growth rate calculated from 1980 and 1986 data [State of Idaho 1988]); and
- o the proportion of the realignment-induced population that will use a recreation area will be the same as the proportion of the existing population that currently uses the area.

For recreation facilities that attract visitors from a more local area, such as C. J. Strike Reservoir, the methodology is modified by reducing the set of counties used as the population base area.

M4.8.5 Impact Assessment

M4.8.5.1 Urban Land

All effects relating to changes in existing land use are expected to occur in Elmore County. All direct military construction effects would occur on base. All indirect construction effects (e.g., local housing)

would occur in or near the city of Mountain Home. Some other indirect effects related to increased recreation demand would occur outside the county.

The ownership status of lands in the vicinity of MHAFB and the city of Mountain Home is not expected to be affected by realignment. No withdrawal of public land is required since the base contains sufficient developable land to meet all military construction needs. The city of Mountain Home or vicinity contain sufficient vacant, appropriately zoned, private land to meet all anticipated demand for housing construction or related development.

The socioeconomic analysis presented in section M4.10 indicates that new housing would be needed in the city of Mountain Home or vicinity. If all units were built at a density corresponding to the city's maximum multi-family density of 16 units per acre, a minimum of approximately 70 acres would be required to accommodate the new units. At the lower multi-family density of 6 units per acre, over 180 acres would be required. Single-family residential development would require additional acreage. Using a conservative approach, this analysis assumes that 150 to 200 acres will to be required for residential use.

From a land-availability standpoint, this requirement would not be considered a significant impact. The Mountain Home vicinity contains adequate acreage of vacant land planned for residential development (approximately 4,250 acres) to meet the need for residential development generated by realignment. From a land-use standpoint, the impact could be significant if all housing units were developed as a single complex. This would create a large homogeneous enclave that could be difficult for the city to absorb and integrate as part of the whole community.

M4.8.5.2 Air Base Area Planning and Zoning

Realignment will result in changes to noise levels both on and off base. However, the noise analysis (see section M4.3) establishes that the areas that would be affected by increased noise levels of 65 L_{dn} or greater lie primarily beneath the flight paths, extending from the ends of the runway to the northwest and southeast. Under current conditions, the 65- L_{dn} contour extends approximately 1 mile outside the Air Base Area boundaries beneath the northwest and southeast flight paths (see Figure M3.3-2). After realignment, the 65- L_{dn} contour will extend 7 to 8 miles (northwest and southeast) beyond the Air Base Area boundaries, the 70- L_{dn} contour would extend approximately 1 mile outside these limits, and the 75- L_{dn} contour would remain confined within the boundary (see Figure M4.3-1).

The noise zone contours resulting from realignment activities are shown in Figure M4.3-7. Comparison of these zones to the locations of existing and planned on-base housing demonstrates that no sensitive land uses will occur within the 75 L_{dn} contour. All existing base housing will be outside of the 75 L_{dn} contour. A limited number of housing units (including dormitories) will be within the zone

between the 75 L_{dn} and 65 L_{dn} contours. Most existing base housing and the base hospital will be outside of the 65 L_{dn} contour. The new military family housing will also be outside of the 65 L_{dn} contour. As these data indicate, changes in noise levels stemming from realignment are not anticipated to result in significant impacts to land use on MHAFB.

All developed off-base areas lie outside of the 65 L_{dn} contour. All of the land outside of MHAFB and within the 65 L_{dn} contour is designated as Agriculture "A" (grazing land and irrigated cropland). No proposed developments are known for the affected area. Hence, the change in noise levels in the vicinity of MHAFB would not have a significant impact on existing or proposed land uses.

Although the safety analysis (see section M4.12) establishes that realignment would result in some increased aircraft mishap potential, data from the AICUZ report indicate that the increased potential would not require changes to the APZs at MHAFB. Therefore, no new constraints on land use would be expected.

M4.8.5.3 Recreation

Potential realignment-related impacts on recreation resources in the ROI will be a function of the increased population at MHAFB, in the city of Mountain Home, and in the vicinity. The increased population base will result in an increased demand for recreation, which, in turn, will increase user pressure at existing recreation areas and facilities. Increased user pressure may degrade the quality of the recreation experience at locations where remoteness and solitude are important components of the recreational activity. The various recreation areas and activities identified in M3.8.6 may receive increased use, although the added population is unlikely to affect user pressure at many of these areas. Therefore, the following examines impacts for only those locations and activities that are most likely to receive increased user pressure or possess a definable potential for impacts.

Many primitive areas that were once accessed only on foot or by horseback due to difficult terrain and remoteness have recently become accessible to weekend recreationists since the advent of the all-terrain vehicle (ATV). The ATV can go where traditional ORVs cannot and can go longer distances on less fuel. Damage to biological and cultural resources and private property often occurs when the ATV or ORV user drives off the established roadways. In popular ORV areas, such as the Owyhee Front and Bennett Hills, extensive environmental damage has occurred due to negligent ORV drivers. The Owyhee Front is a limited ORV use area (visitors must use existing roads and ways) and Bennett Hills is currently identified as "open." However, a new management plan is being developed for ORV use in the Bennett Hills.

In view of the currently inadequate enforcement capability of BLM land managers to patrol remote lands with sensitive resources and to apprehend ORV riders in areas closed to such activity, even a

small increase of ORV activity in sensitive areas could have a significant effect on threatened and endangered species (see section M4.4), cultural resources (see section M4.5), and wilderness qualities. The probability is very low that the BLM will receive additional funding or manpower sufficient to meet current enforcement needs (personal communication, Jenks 1989), so increased ORV activities would exacerbate the problem.

Using the methodological approach described in section M4.8.4.3, it is estimated that realignment-generated recreation use in the Bennett Hills will increase by 325 annual visits. In the Owyhee Front area, estimated recreation use will increase by 72 annual visits. In terms of numbers of visitors, these increases are not considered significant.

The recreational facilities at C. J. Strike Reservoir will receive increased usage due to the realignment-generated population increase. Using the methodology in section M4.8.4.3, and the population of a three-county area, (Elmore, Canyon, and Ada counties), estimated use at C. J. Strike Reservoir will increase to 1,330 annual visits. In an area where visitor use is dispersed throughout 7,000 acres, this increase in visitors is considered to be insignificant.

Limited access along the Payette River and the South Fork of the Boise River has been identified as an increasing management problem. Private ownership of portions of the riverside and some of the better river access points, combined with an increased recreation demand, has caused congestion on the rivers and decreased the value of the recreation experience. Any increased use of these rivers resulting from the realignment-related population increase would be considered a significant impact.

At the Bruneau Dunes and Three Island state parks, the capacity of the camping facilities has been reached during certain seasonal and holiday weekends. However, most visitors use these parks as stop-overs on the way to another destination. Currently, day use is not considered at capacity at these parks or at Malad Gorge State Park, a day-use only park (personal communication; Yarborough, McGraw, Worth 1989). Realignment-related increased use of these state parks is expected to have an insignificant impact.

The increase in the population of MHAFB and the city of Mountain Home is not expected to be sufficient to affect the availability of hunting and fishing opportunities.

In the city of Mountain Home, some overcrowding of public parks, sports fields, and the swimming pool is already occurring. Based on the current population and city standards (12 acres of parkland per 1,000 population), Mountain Home has a 24-acre deficiency in parklands. The estimated realignment-related population increase would create an additional deficiency of 33 acres of parkland. This additional deficiency would significantly affect the city's recreation resources. In contrast, recreation facilities on MHAFB should be sufficient to meet demands resulting from realignment.

M4.8.6 Mitigations

M4.8.6.1 Urban Land

Although sufficient and suitable land is available to accommodate the anticipated demand for off-base housing and development, if all new housing were concentrated in one area, it could be difficult for the city to absorb. Encouragement of two to five or more geographically dispersed separate new housing projects in the city of Mountain Home and vicinity would provide for small community-sized developments more in scale with the existing urban area. Such separate developments would also disperse traffic and other growth-related effects.

M4.8.6.2 Recreation

To help reduce the regional problem of environmental damage resulting from ORV use, the Air Force could promote safe and appropriate ORV use to on-base military and civilian personnel. The promotional effort could also encourage these personnel to transmit the precepts of appropriate ORV use to the off-base community. Additional mitigation measures are discussed in sections M4.5 and M4.7.

Impacts from increased recreation demand at locations currently overused (during certain periods) by excursion groups, such as the Payette River and the South Fork of the Boise River, could be mitigated by (1) cooperating with the appropriate land management agencies to develop a program that reduces excursion group use of such locations, (2) encouraging groups associated with MHAFB recreation programs to avoid use of these locations or use them during low-demand periods, and (3) promote similar programs in the off-base community. These mitigations could reduce any potential realignment-generated impacts at these locations to a level of insignificance.

Impacts stemming from increased demand on recreation facilities in the city of Mountain Home could be mitigated by provision of funding and other assistance for acquisition and development of new or expanded parks and recreation programs. Assistance may be available from multiple sources. For further detail, see section M4.10.6. In particular, the Department of the Interior (DOI) has several programs that have potential for park and recreation assistance (e.g., Park and Recreation Technical Services assistance, Urban Park and Recreation Recovery grants, and Land and Water Conservation Fund grants).

M4.9 TRANSPORTATION

M4.9.1 Regulatory Setting

The most important regulatory issue in reference to transportation impacts from the base activity focuses on 49 CFR, which regulates movement of hazardous freight. Increases in truck shipments of jet fuel are expected, and these shipments must comply with existing procedures, as will other shipments of hazardous material.

For design of new roadway facilities, several documents are utilized for planning purposes as well as safe operational practices. These are the *AASHTO Policy on Design of Urban Highways and Arterial Streets*, the *Manual on Uniform Traffic Control Devices and Arterial Streets and Highways*, and the *Highway Capacity Manual* (Transportation Research Board 1985), which is also used for analysis of existing operational conditions.

M4.9.2 Issues and Concerns

The realignment activities will result in a population increase of approximately 5,500 people within the ROI. This number includes military and civilian base personnel and their dependents as well as an in-migrating workers. More people in the area will result in an increased utilization of the transportation systems, most importantly the roadway network in the ROI.

The primary issues to be addressed are as follows:

- o Changes in the operational efficiency of segments of the roadway network, i.e., changes in the levels-of-service.
- o Increase in accidents as a result of increased use of the roadway network.
- o Increased cost for maintaining roadways as a result of accelerated deterioration of the infrastructure.
- o Effects of constructing and/or closing transportation facilities on the network.

The rail and air transportation facilities will have negligible increased utilization as a result of the realignment.

M4.9.3 Significance Criteria

The impacts of the realignment on traffic and the roadway network are based on the following significance criteria:

- o *Level-of-Service.* A change in a level-of-service is significant; however, only a reduction below the minimum desirable design standard (LOS C) should warrant mitigative action.
- o *Safety.* An increase in the number of accidents at a given location could change the accident rate. A significant rate change, for example, a rate above the state-wide average for a similar type of section, could necessitate a change of traffic control or geometric improvement.
- o *Roadway Maintenance or Improvements.* Construction or closure of roads in the network is significant if the consequential re-routing of traffic significantly impacts other links of the existing network. Should maintenance activity increase, a benefit-cost analysis should be considered.

Since no impacts are expected on the ROI's rail or air transportation facilities from the realignment, significance criteria for those modes of transportation are not presented here.

M4.9.4 Methodology for Analyzing Impacts

Impacts on the users of the transportation roadway network can be broken into two groups: user impacts and facility impacts. User impacts can be measured by changes in levels-of-service and an increase in accidents. Facility impacts stem from either an increase in maintenance activities or the necessity for providing new or improved roadways (and/or bridges). An example of a facility impact would be an increased roadway deterioration rate caused by an increase of heavy trucks on the system. Another example would be rerouting of traffic should a new road be built.

No new roads or road closures are currently planned for the off-base portion of the ROI, and increases in truck traffic caused by the realignment activity should be negligible. New roads will be necessary to provide access to some new on-base buildings and housing not served by existing roads. These roads, however, will primarily service the new housing and buildings without engendering major impacts to other roadway network facilities. Thus, the analytical focus is on user impacts rather than facility impacts.

M4.9.4.1 Levels of Service

User impacts are evaluated based on the change in level-of-service (i.e., A-F, see section M3.9) and accident rates for the network. Traffic patterns generally follow an hierarchical order. Local traffic typically has origins (or destinations) such as homes, businesses, or schools. Local streets feed into higher volume roads known as collectors, which in turn provide access to higher volume arterial roads. The base expansion will cause an increase in local vehicular traffic, but detailed evaluation of all of the potential trips by purpose and the travel patterns generated is not possible without an extensive modelling effort involving a large data collection effort. Given the relatively light traffic flows on the existing local roads in the area, there is sufficient excess capacity to absorb expected traffic increases. The expected increases in traffic volume will be felt on the sections of the network that carry the aggregated traffic, those generally being arterials and collectors.

More specifically, these arterials and collectors experience the heaviest use during peak periods. Thus, the major impact of the expansion will be increased commuter traffic on the major base access routes.

For this study, the ADTs for the network are projected for 1992 when the realignment will actually occur. From these projections, the expected operational conditions of the network can be determined. Once the 1992 baseline conditions are known, the traffic generated by the increase in base personnel is added. The operational conditions are then compared to the baseline 1992 conditions to identify impacts.

M4.9.4.2 Accidents

Accident data were obtained from IDOT for intersections within Mountain Home as well as all roadways within Elmore County. Two different sources were drawn upon, *IDOT Pavement Management System Highway Needs Study 1988* (IDOT 1989b), and reports generated from the Highway Safety Department.

From these sources, accidents on the major components of the impacted segments of the roadway network were reviewed. Accident rates are then used to estimate the increase in the number of accidents.

M4.9.5 Impact Assessment

M4.9.5.1 Mountain Home Roadway Network

Table M3.9-3 defines the primary links or sections of the ROI that carry the most vehicular volume and are subject to impacts from population increases in Mountain Home. These sections were highlighted in Figure M3.9-2.

The general roadway network characteristics are given in Table M4.9-1 for the links of the network under evaluation. State DOTs typically maintain a 20 year forecast for traffic needs. IDOT uses a straight-line growth rate to determine the future ADTs for roads in the Mountain Home area. Given the 1988 and 2008 ADT projections, the annual growth rate is calculated to allow interpolation of the estimated ADTs for the year 1992, as seen in Table M4.9-2. By inspecting the 1992 projections, it is evident that volume increases should be extremely small over the next three years. These small increases will not change the levels-of-service for the sections unless an existing volume is high enough for a section to be borderline between A and B. Regardless of this possibility, a level-of-service B is perfectly acceptable for vehicular movements.

The increase in traffic as a result of the realignment will not be isolated to a single route with the exception of Airbase Road. Once base commuter traffic nears the intersection of SH67 (Airbase Road) and I-84B, commuters begin to dissipate into the various area of Mountain Home. To calculate new levels-of-service on most of the defined links of the network is not possible without a considerable data collection effort. This would require a trip generation model, traffic signal configurations, and numerous vehicle counts to get peak hour volumes for many links of roadway.

In place of this costly effort, an engineering judgement was made based on several factors. City officials were contacted to determine problem areas within the roadway network. They indicated that other than the intersection of SH67 and I-84B, traffic moves efficiently throughout the ROI. An observation of the area also showed no congestion problems other than the one stated above. Finally, given IDOT's level-of-service rating of A for all the defined links, it is very unlikely these would drop lower than B or possibly C despite the increase in ADTs. Some internal links of the network, such as 3, 8, 9, and 10, are candidates for congestion problems, but mitigative measures are available.

The intersection of I-84B and SH67 is also analyzed by projecting volumes to 1992 (IDOT 1989c). Based on a design hour volume from an independent study of this intersection by Higgins Engineering, the level of service changes from B to C with only a 1-percent annual increase in traffic to 1992. This location has the lowest level-of-service found on the network.

Table M4.9-1

CHARACTERISTICS OF MOUNTAIN HOME ROADWAY NETWORK

<i>Link</i>	<i>Section Length (miles)</i>	<i>No. of Lanes</i>	<i>Width (feet)</i>	<i>1988 ADT</i>	<i>1988 LOS</i>
1	0.96	2	20	2,298	A
2 ¹	1.08	4	64	2,620	A
3	0.70	4	64	5,827	A
4	1.19	4	62	10,025	A
5	1.00	2	24	1,210	A
6	9.52	4	48	6,970	A
7	3.64	2	24	7,370	A
8 ¹	0.65	3	56	7,490	A
9 ¹	0.71	3	54	7,367	A
10	0.25	2	24	11,800	A
11	5.85	2	24	2,938	A
12	8.95	4	48	6,510	A

Note: 1. The characteristics along these links are slightly varied. The link is defined according to the segments within the link having the heaviest vehicle volumes.

Source: IDOT Pavement Management System, Highway Needs Study 1988.

Table M4.9-2

**1992 PROJECTED BASELINE VEHICLE VOLUMES
FOR THE MOUNTAIN HOME ROADWAY NETWORK**

<i>Link</i>	<i>1988 ADT</i>	<i>2008 ADT (Projected)</i>	<i>Approximate Annual Percent Growth</i>	<i>1992 ADT (Projected)</i>
1	2,298	3,306	1.9	2,478
2 ¹	2,620	3,200	1.0	2,706
3	5,827	7,056	1.0	6,064
4	10,025	12,095	1.0	10,432
5	1,210	1,595	1.5	1,284
6	6,970	11,503	1.0	7,694
7	7,370	8,217	1.0	7,669
8 ¹	7,490	8,300	1.0	7,794
9 ¹	7,367	8,158	1.0	7,666
10	11,800	13,030	1.0	12,279
11	2,938	3,281	1.0	3,057
12	6,510	7,859	1.5	6,774

Note: 1. These volumes are projected for the segments of the link with the highest ADT.

Source: IDOT Pavement Management System, Highway Needs Study 1988; SAIC 1989.

The increase in population at the base is expected to be approximately 2,000 military and civilians. Despite construction of new housing units on-base, an estimated 1,500 additional commuters will travel daily between Mountain Home and the base. Adding this traffic to the 1992 estimated ADT and using a design hourly volume of 10.9 percent, the increase in volume at the intersection is about 300 vehicles, dropping the level-of-service below C. However, the traffic will not be distributed throughout the day. Rather, an estimated 1,000 to 1,300 vehicles will pass through the intersection during the A.M. peak hour and again during the P.M. peak hour. The volumes during these peak hours become so large that oversaturation occurs. This in effect means that the volume of the intersection has exceeded the capacity, and level-of-service calculations are unreliable. So while the intersection is a problem now, it will be a problem in 1992 as a result of expected normal population increases for Mountain Home, and it will be compounded by the increase of traffic from the realignment.

Despite the considerable problems with peak hour traffic, the design for engineering facilities is typically not performed for the peak hour, rather a design hour. Constructing all infrastructure, roadways, intersections, etc. for the worst possible scenarios cannot usually be justified economically. Engineering judgment is typically used in evaluating between the design hourly volume and the peak hourly volume. An independent study was performed for IDOT (Higgins Engineering 1989) to consider the design of the new underpass or overpass that will replace the intersection of I-84B and SH67. The results of this study revealed no change in the design either with or without the realignment.

From the Highway Needs Study, the rounded average number of accidents for the defined network links was found based on the previous five years of data. Given the 1992 ADT baseline projections, around 50 accidents will occur on these sections of roadway. Using exaggerated ADTs from the realignment and applying the accident rate from the previous five years, perhaps 20 to 30 more accidents will occur on the network, after the realignment has occurred.

The Highway Safety Department generated reports on accidents for the period from 1986 to 1988 for both sections of roadway and intersections. No intersections experienced a large number of accidents, and none were fatal. The highest number were found along SH51 at the intersections of 3rd Street East (13), 2nd Street East (12), 10th East Street (8), and the business loop, I-84B (7). (Of the 7 accidents at the intersection of I-84B and SH67, which has the worst operational conditions within the ROI, 3 occurred on the weekend and 4 were under surface conditions of ice or snow.) Accident rates for the intersections were not calculated as traffic volumes are not available for the minor streets, but given the low number of accidents over the three previous years, these locations do not impose unreasonable safety hazards to users.

For segments of roadway within the ROI, the analysis focus is limited to the links of roadway previously defined. Of the locations in Elmore County with the highest number of accidents, only SH67 ranks

high on the list with 43 accidents over the last three years. Reports from the Highway Safety Department also revealed that almost all of the accident rates on the network are below the state average for similar types of roadways. One location along I-84B in the downtown area was found to have an accident rate just barely above the critical rate.

M4.9.5.2 MHAFB Transportation Network

No significant impacts on the base roadway network are expected from the realignment activity. As with the current conditions, most traffic movements will occur during the peak hours. Traffic volumes are sufficiently low to absorb additional traffic brought on by the increase in residential housing on the base; however, a traffic control device could be warranted for Chestnut Street and Main Avenue after the new construction is completed. Approximately 432 housing units are planned, which in effect means that as these workers move toward Main Street to get to office locations, they will have to make a left turn against oncoming commuter traffic. Should this become a problem, the location will have to be studied further to determine if a traffic signal is warranted.

It is also expected that as facilities are added to the flight line area, more workers will be drawn to this area of the base. The new construction will likely replace existing parking areas; therefore, additional lots may be required northeast of Oak Street.

During fiscal 1991 when the bulk of new facilities are to be constructed, an estimated 500 construction workers will travel daily to the base. It is assumed that these workers will have a different shift time than the base personnel so as not to increase the peak hour traffic.

M4.9.6 Mitigations

One mitigative measure for the congestion at the intersection of I-84B and SH67 would involve retiming the signal during peak hours, especially during the P.M. peak hour when the large volume of eastbound left-turn traffic backs up along SH67. The current signal is pre-timed, with the cycle remaining constant. IDOT has confirmed that the signal could be activated during certain hours to change the cycle length.

During the two periods when base commuting traffic will be detrimental to the operation of the roadway network, some options are available to ease the pressure on the system. With the increase in base personnel in 1992, staggered working hours may be necessary to spread the peak hour traffic. For example, a workday of 7:00 A.M. to 4:00 P.M. (in comparison to the existing 7:30 A.M. to 4:30 P.M.) for half of the base personnel on the day shift would substantially reduce the expected congestion along the travel paths from Mountain Home to the base.

Another option to reduce the peak hour traffic would be to establish van pools or bus service. However, this strategy has met with little success in other situations where peak-hour traffic has increased and levels of service have decreased.

The daily volume for the proposed intersection and underpass replacement project is 18,000 vehicles, which is sufficient to accommodate the realignment growth. Once in place, this new configuration should relieve most of the pressure on the existing system to allow comfortable operating conditions. Planned for FY95, this project schedule is flexible.

M4.10 SOCIOECONOMICS

M4.10.1 Regulatory Setting

Economic growth in the ROI depends, in part, on state, county, and community regulations and policies regarding housing and land use. These include regulations for residential construction, zoning ordinances, and related regulations. Air Force standards for housing (AFR 90-1 and 90-2) and Air Force housing programs (Section 801, build-lease, and Section 802, rental guarantee) may affect the development and allocation of housing for in-migrants. Other plans and policies pertinent to growth impacts are discussed in section M4.8, Land Use.

With the assistance of the Office of Economic Adjustment, a local steering council has been established to help plan for growth created by the realignment. The objectives of the Elmore County Impact Steering Committee (ECISC) are:

- o To serve as the official point of contact for all federal, state, and local actions concerning the realignment and to collect, analyze, review, and disseminate information related to realignment-generated socioeconomic impacts.
- o To identify local government concerns and to recommend priorities for services and facilities among local governments.
- o To provide collective guidance to local communities related to community expansion and growth impacts resulting from substantial population increases.
- o To assist in developing impact funding proposals to finance additional community services and facilities and to serve as an advocate for local concerns.
- o To review existing plans and studies to determine where study efforts are needed to establish a current baseline of community services and facilities.

The ECISC includes representatives from Glenns Ferry, Mountain Home, school districts 192 and 193, and the Elmore County Board of Commissioners. Ex-officio members are the MHAFB wing commander, the governor of Idaho, a liaison officer assigned by the Air Force, and other members as determined by the ECISC.

M4.10.2 Issues and Concerns

Depending upon local economic and demographic characteristics, the realignment of personnel to MHAFB will have an impact upon the ROI. The direct effects of the action would include (1) in-migrating population (military personnel and their dependents), (2) personal consumption expenditures in the ROI by in-migrating personnel, and (3) jobs and local purchases of goods and services resulting from the construction of new facilities. If the labor requirements associated with this construction activity cannot be met by the local labor force, temporary in-migration may also occur. Direct project-related expenditures in the local economy would generate additional, indirect jobs and earnings through a multiplier effect. Many of these indirect jobs may be filled by local workers; however, if the size and skill composition of the local labor force cannot accommodate project-generated demand for labor, additional in-migration to the region will occur. The in-migrating population resulting from the realignment will require housing, community services, and facilities such as schools, hospitals, police and fire protection, and utilities, including water, sewer, and power. Adverse socioeconomic impacts are created when project-generated demand exceeds the carrying capacity of these services.

M4.10.3 Significance Criteria

The significance of population, employment and income (i.e., regional growth) impacts are typically assessed in terms of related effects upon other socioeconomic resources, such as housing, schools, and utilities. Consequently, no significance criteria are required for evaluating regional growth impacts. With respect to housing and community services and facilities, impacts will be assessed according to the following criteria:

- o *Housing.* If housing demand generated by the realignment creates a housing deficit that exceeds 10 percent of the total on-and-off-base housing stock, the impact is considered significant.
- o *Education.* If additional teachers, facilities or capital improvement projects are required as a result of the realignment, the impact is considered significant.
- o *Police and Fire Protection and Health Services.* If additional personnel, facilities or capital improvement projects are required as a result of the realignment, the impact is considered significant.
- o *Utilities.* If demand for utilities generated by the realignment requires expansion of service capacity or the development of new facilities to maintain current levels of service, the impact is considered significant.

M4.10.4 Impact Assessment Methodology

The economic impacts of the realignment were estimated using the Regional Input/Output Modeling System II (RIMS II) developed by the U.S. Department of Commerce, Bureau of Economic Analysis. This method generates multipliers such that the indirect effects of the realignment can be identified. The model enables the evaluation of impacts pertaining to population, employment, and income. Impacts to housing are assessed by comparing both direct and indirect demand created by the realignment to available housing stock. Impacts to community services and facilities are evaluated by comparing demand generated by in-migrating population to service capacities.

M4.10.5 Impact Assessment

M4.10.5.1 Population

The realignment will involve a net addition of 1,820 military personnel at MHAFB with 1,526 departing and 3,346 arriving by late 1992. The projected net increase represents a 48.4-percent increase over the current number of military personnel at the base. A projected net increase of 174 appropriated-fund civilian jobs will be required for the realignment with 75 being transferred elsewhere and 249 new authorizations at MHAFB. The projected net increase involves a 35.7-percent increase over the current appropriated-fund civilian employment at the base.

The total number of military personnel and their dependents is projected at 4,377 when the realignment is completed in fiscal 1992 (see Table M4.10-1). An additional 1,404 civilian jobs from initial, direct, and indirect expenditures will be generated by 1994. Many of these jobs will be filled by local residents and spouses of in-migrating Air Force personnel. The remaining jobs will be filled by members of in-migrating households. As shown in Table M4.10-1, the total number of civilian in-migrants by fiscal 1994 is projected to be 1,184. Thus, the projected military and civilian population impact on the single-county ROI is 5,561, or about a 21-percent increase in the projected 1994 population of 26,284 (see Table M3.10-2).

Based on a comparison of the projected supply of housing and realignment-generated demand, the total increase in people living at MHAFB by 1994 is estimated at 2,757. The total population change to the city of Mountain Home will be 2,586, or about a 26-percent increase in the projected 1994 population of 9,778 (see Table M3.10-2). The remaining 218 realignment-generated in-migrants will live in other parts of the county or in adjacent jurisdictions.

Table M4.10-1

**POPULATION IMPACTS OF MOUNTAIN HOME AIR FORCE BASE REALIGNMENT
Elmore County**

		<i>Fiscal Year 1994</i>
<u>Military</u>		
Military Personnel		1,820
Spouses		1,271
Children		1,286
SUBTOTAL MILITARY POPULATION		4,377
<u>Civilians</u> ¹		
Workers		511
Spouses		307
Children		366
SUBTOTAL CIVILIAN POPULATION		1,184
TOTAL POPULATION IMPACT		5,561

Note: 1. Civilian employment projections are based on RIMS II earnings multipliers.

Sources: 366 TFW/MET 1985; Description of Spouses of Officers and Enlisted Personnel in the U.S. Armed Forces 1985, Defense Manpower Data Center, Arlington, VA; Statistical Abstract, 1989, tables 68, 626, and 638.

M4.10.5.2 Employment and Income

The projected initial employment impacts of the base realignment consists of the 1,230 military personnel and the 174 civilians as discussed above. An additional 1,230 indirect jobs in the ROI will be supported by local expenditures generated by the realignment (see Table M4.10-2). Approximately 65 of these jobs will be filled by construction workers expected to be needed for on-base construction in fiscal 1990. Construction projects totaling \$76.05 million are planned for fiscal 1991, and construction employment related to these on-base projects is projected at 504. Planned construction expenditures fall back sharply to \$9.02 million in fiscal 1992, and the associated construction jobs are projected to fall to 59. Outyear construction projects planned beyond fiscal year 1992 total \$43.2 million. One-half of these expenditures have been assumed to have been made in each of the fiscal years 1993 and 1994. The construction jobs related to these expenditures are projected at 143.

Based on national averages of employed spouses of Air Force personnel, a projected 582 additional civilian jobs will be filled by working spouses of additional military personnel by 1994. Although approximately 20 percent of the additional construction jobs are expected to be filled within the ROI, it has been assumed that the net effect of additional jobs in other industries and sectors of the local economy will require the in-migration of workers from outside the area. This assumption is based on a relatively low level of unemployment in the ROI.

Operations expenditures in fiscal 1991 will decline in that year as a net decline in personnel is projected. However, earnings from additional direct and indirect employment generated by changes in initial construction and operations spending will result in approximately \$31 million of earnings in the ROI.

The projected net increase in payroll expenditures for appropriated-fund military and civilian personnel at MHAFB is approximately \$43.8 million beginning in fiscal 1992. Projected mean annual wages for these additional personnel are \$39,000 for officers, \$19,921 for enlisted members, and \$24,777 for appropriated-fund civilians.

Additional earnings of \$11.4 million are projected to be generated in the ROI beginning in fiscal 1992 from the operations-related expenditures associated with the realignment. Initial expenditures from outside the region for on-base and off-base construction are expected to generate an additional \$4.9 million in earnings in fiscal 1992 and \$10.5 million in fiscal 1993 and fiscal 1994. Thus, the projected total direct and indirect impact of initial construction and operations expenditures related to the action exceeds \$16.3 million in fiscal 1992 and \$21.7 million in fiscal 1993 and 1994.

The average annual earnings of workers on military construction projects are projected at \$60,582, including overtime pay (SAIC 1989). Contractors for the military construction projects will be subject

Table M4.10-2

**INDIRECT EMPLOYMENT IMPACTS OF
MOUNTAIN HOME AIR FORCE BASE REALIGNMENT
Elmore County**

<i>Sectors</i>	<i>1987 Total ROI ¹</i>	<i>1994/4 ³</i>	<i>Percent of 1987 Total</i>
Construction	354	171	48.3
Trade and services ²	3,639	860	23.6
Other	5,931	199	3.4
TOTAL	9,924	1,230 ⁴	12.4

Notes:

1. By place of work.
2. Includes state and local government.
3. Based on calculations from RIMS II earnings multipliers.
4. The total civilian employment supported by the realignment will be 1,404 (174 direct plus 1,230 indirect) jobs.

Source:

Regional Economic Information System, Bureau of Economic Analysis, U.S. Department of Commerce, 1989.

to compliance with Davis-Bacon legislation. Average annual earnings in 1992 for all jobs created by the initial expenditures for additional on-base and off-base construction is projected at \$34,483. Average annual earnings for the jobs created from the additional operations-related expenditures in that year is projected to be \$12,292. Approximately 84 percent of these jobs are in the trade and services sectors of the economy.

M4.10.5.3 Housing

The realignment will involve a direct transfer of military and civilian personnel to the Mountain Home area. The large amount of construction associated with the realignment will create employment and attract additional workers, as will the increase in demand for goods and services. A large proportion of the military personnel will be unmarried and unaccompanied by dependents. Discussions with base personnel indicate that sufficient dormitory space and on-base housing exists for unaccompanied personnel. However, many of the new workers, especially civilians, will move into the area accompanied by their families. These families will increase the demand for housing on MHAFB and off base in adjoining communities. An additional 432 MFH units have been approved for fiscal 1992 to support realignment, bringing the projected total of MFH units to 1,953. The majority of the planned units are two-bedrooms for all grade levels, and 199 of the new units have been designated for enlisted E-3 and below.

The housing impacts of the realignment are shown in Table M4.10-3. The demand for owner-occupied and rental units will increase by an estimated 1,782 households in 1994. The available off-base supply of housing will be 733 units, and 902 additional units will be constructed on MHAFB and off base under 801 build/lease program. There is an estimated deficit of 147 units unmet by the projected supply.

The increased housing demand due to the realignment will be largely accommodated by expected increases in the supply of housing on and off MHAFB. The projected deficit of 147 units, which amounts to less than 2 percent of the projected 7,455 owner-occupied and rental units off base, is a potentially adverse but insignificant impact. At worst, this deficit would be manifested in a short-term increase in housing prices. Such an increase would provide an incentive for additional home construction until the added supply drives housing prices back down to a more long-term equilibrium. A number of mitigation programs, described in section M4.10.6, exist for those financially burdened by increased housing costs due to government actions.

Table M4.10-3

**SUMMARY OF FAMILY HOUSING IMPACTS
IN ELMORE COUNTY BY 1994**

Increased Demand:	
Military families	1,271
Civilian families ¹	<u>511</u>
Total (A)	1,782
Increased Supply:	
Community ²	733
Military ³	<u>902</u>
Total (B)	1,635
NET DEFICIT (A - B)	147

- Notes:
1. Includes direct and indirect civilian families, and accounts for working spouses.
 2. Includes new or currently vacant 600 single-family houses and 133 rental units.
 3. Includes 432 military family housing units on base, and 470 units constructed under the Section 801 Build-Lease program.

M4.10.5.4 Community Facilities and Services

Education

As shown in Table M4.10-4, the major influx of students in Elmore County is projected to occur in fiscal 1992 or in the school year 1991-92. Due to addition of base personnel and the increase in construction expenditures in fiscal 1990, an initial 115 school-aged children of military personnel and 44 school-aged children of civilian workers are projected to come into the county in early 1990. The planned departure of military personnel in the summer of 1990 will lead to an outflow of students. However, much of this outflow will be offset by the in-migration of the children of direct and indirect workers associated with extensive construction projects planned for fiscal 1991. The projected impact on enrollment for the 1990-91 school year is 69 students below the current level.

Enrollment in the 1991-92 school year is projected to rise 1,073 above the current level. A projected 836 students will be children of military personnel. Preliminary projections of on- and off-base construction spending for fiscal 1993 and fiscal 1994 is projected to lead to further increases in civilian workers and their children in the area. The projected change in enrollment for the school years 1992-93 and 1993-94 is 1,102 above the current level.

Most of the impact on school enrollment from the realignment of MHAFB is projected to be felt by the Mountain Home School District No. 193, as shown in Table M4.10-5. As noted above, most of the impact is projected to occur in the school year 1991-92. Until then, the current capacity of 4,339 is expected to be adequate. The addition of some base personnel in early 1990 and the planned base spending for the year are projected to result in an additional 148 students in the Mountain Home School District. All incoming students have been assumed to reside off-base in 1990 since on-base military family housing units are occupied at near-capacity levels and no additional units are planned for construction until 1991.

Enrollment is projected to be below the current level throughout the school year 1990-91. Projected enrollment at the beginning of the 1990-91 school year is 247 students below the current level, but the district is expected to gain a partially offsetting 165 students due to heavy construction spending scheduled to begin in late 1991. Enrollment during the 1991-92 school year is projected to be 1,027 above the current level. A projected 457 students will be children of military personnel residing on base. Additional enrollment is projected to continue to grow to 1,051 in the school year 1992-93 and 1993-94 due to further spending associated with the realignment.

Deficiencies in facility space for students in the Mountain Home School District are highest at the elementary level. Additional space for 250 to 300 elementary students is projected to be needed beginning in the school year 1991-92. The Air Base Elementary School is projected to be deficient of

Table M4.10-4

PROJECTED IMPACT ON ELMORE COUNTY SCHOOLS

	FY 1990/2	FY 1990/4	FY 1991	FY 1992	FY 1993	FY 1994
<u>Military</u>¹						
Children	177	(394)	(394)	1,286	1,286	1,286
School-age	115	(256)	(256)	836	836	836
Kindergarten to grade 6	77	(171)	(171)	560	560	560
Grades 7 to 9	22	(49)	(49)	159	159	159
Grades 10 to 12	16	(36)	(36)	117	117	117
Special needs	0	0	0	0	0	0
Self-contained	0	0	0	0	0	0
Resource rooms	7	(16)	(16)	52	52	52
<u>Civilian</u>²						
Children	61	7	257	326	366	366
School-age	44	5	187	237	266	266
Kindergarten to grade 6	23	3	99	125	141	141
Grades 7 to 9	10	1	41	52	58	58
Grades 10 to 12	11	1	47	60	67	67
Special needs						
Self-contained	0	0	0	0	0	0
Resource rooms	3	0	14	19	21	21
<u>Total Military and Civilian</u>						
Children	238	(387)	(137)	1,612	1,652	1,652
School-age	159	(251)	(69)	1,073	1,102	1,102
Kindergarten to grade 6	100	(168)	(72)	685	701	701
Grades 7 to 9	32	(48)	(8)	211	217	217
Grades 10 to 12	27	(35)	11	177	184	184
Special needs						
Self-contained	0	0	0	0	0	0
Resource rooms	10	(16)	(2)	71	73	73

- Notes:**
1. An additional 432 Military Family Housing (MFH) units are assumed to be ready for occupancy by FY 1992.
 2. Projections of additional children of civilians, excluding the appropriated-fund civilians, were based on employment impacts projected using RIMS II earnings multipliers.

Source: Office of Mountain Home School District No. 193, 1989; Segmented Housing Market Analysis for Mountain Home Air Force Base, SAIC 1989.

Table M4.10-5

IMPACTS FROM REALIGNMENT ON MOUNTAIN HOME SCHOOL DISTRICT NO. 193

	<i>FY 1990/2</i>	<i>FY 1990/4</i>	<i>FY 1991</i>	<i>FY 1992</i>	<i>FY 1993</i>	<i>FY 1994</i>
Military						
Children	0	(241)	(241)	703	703	703
School-age	0	(157)	(157)	547	457	457
Kindergarten to grade 6	0	(105)	(105)	306	306	306
Grades 7 to 9	0	(30)	(30)	87	87	87
Grades 10 to 12	0	(22)	(22)	64	64	64
Special needs	0					
Self-contained	0	0	0	0	0	0
Resource rooms	0	(10)	(10)	29	29	29
Civilian ¹						
Children	221	(139)	87	842	875	875
School-age	148	(90)	75	570	594	594
Kindergarten to grade 6	93	(61)	26	350	363	363
Grades 7 to 9	30	(17)	19	115	120	120
Grades 10 to 12	25	(12)	30	105	111	111
Special needs						
Self-contained	0	0	0	0	0	0
Resource rooms	10	(6)	7	39	41	41
Total Military and Civilian						
Children	221	(380)	(154)	1,545	1,578	1,578
School-age	148	(247)	(82)	1,027	1,051	1,051
Kindergarten to grade 6	93	(166)	(79)	656	669	669
Grades 7 to 9	30	(47)	(11)	202	207	207
Grades 10 to 12	25	(34)	8	169	175	175
Special needs						
Self-contained	0	0	0	0	0	0
Resource rooms	10	(16)	(3)	68	70	70

Notes: 1. Projections of additional children of civilians, excluding the appropriated-fund civilians, were based on employment impacts projected using RIMS II earnings multipliers.

Source: Office of Mountain Home School District No. 193, 1989; Segmented Housing Market Analysis for Mountain Home Air Force Base, SAIC 1989.

space for 100 to 150 students beginning in 1991-92. Mountain Home Junior High School will be operating at around 100 percent of capacity beginning in school year 1991-92 if no additional space is added.

Air Base Junior High School is projected to have adequate capacity. However, additional capacity will be needed at Mountain Home High School to accommodate the projected increase in enrollment for school years 1991-92 through 1993-94. Projected enrollment for the school in 1993-94 will exceed the current level of full capacity by at least 20 students.

Based on enrollment and personnel data for the 1987-88 school year from the Mountain Home School District, there were approximately 20 elementary students enrolled per elementary teacher and approximately 17 secondary students per secondary teacher (Student Information 1987-88, Mountain Home School District No. 193, 1989). Assuming these student-teacher ratios, the projected increase in enrollment for the district in school year 1993-94 due to the base realignment will require an additional 33 elementary teachers and an additional 22 secondary teachers. This is a significant impact that can be mitigated through the implementation of mitigation measures described in section M4.10.6.

The Mountain Home School District provides two types of special education. The district provides training for students in resource rooms primarily for students with learning disabilities. These students are pulled from a regular classroom to receive additional instruction. Based on the March 17, 1989 levels of resource room instruction, a projected 71-73 additional students will require such instruction in school years 1991-92 through 1993-94 (Enrollment Report, Mountain Home School District No. 193, March 17, 1989). Instruction for the severely handicapped and the emotionally disturbed is also provided in self-contained classrooms, but less than one-tenth of one percent of the March 17, 1989 enrollment were placed in this type of instruction (Enrollment Report, Mountain Home School District No. 193, March 17, 1989).

Police and Fire Protection

Population increases associated with the action would generate additional demand for police and fire protection in Elmore County. Based on 21 Sheriff's Department employees serving a total population of about 13,000 residents in the unincorporated parts of the county, the current ratio for number of personnel per 1,000 population is 1.62. Given a total population increase in the unincorporated parts of the county of about 200 people, no additional personnel will be required to maintain current levels of service. For the city of Mountain Home, 2,586 new residents would require an additional six personnel to maintain current levels of service (2.47 employees per 1,000 population). This is a significant impact that can be mitigated through implementation of measures described in section M4.10.6.

The current level of service for fire protection in the city of Mountain Home is 3.48 personnel per 1,000 residents. New in-migrants generated by the realignment will lead to a requirement for an additional 10 personnel to maintain this level of service. This is a significant impact that can be mitigated through implementation of measures described in section M4.10.6. The need for additional fire protection facilities at MHAFB is addressed in section M4.12, Safety.

Health Services

Realignment-related impacts on health services are assessed with respect to increased demand for hospital care compared to existing capacity. Currently, the ratio of hospital beds per 1,000 residents in the county is 3.5. Approximately 2,800 new residents of the county by fiscal 1994 will lead to a need for about 10 more hospital beds to maintain the current level of service. However, since many of the in-migrants to Elmore County will be military personnel and their families, much of this increased demand can be accommodated at the new 31-bed, 146,000 square-foot hospital at MHAFB. In addition, there are already plans to expand the hospital by 3,000 square feet as a result of the MHAFB realignment. Given this increased level of service and current utilization rates, the action is not expected to significantly impact health services in the ROI.

Utilities

WATER. Increased demand for water compared to existing capacity is discussed in section M4.11, Water Resources.

WASTEWATER. Realignment generated in-migrants will create additional demand for wastewater distribution and treatment in the ROI. The city of Mountain Home's sewerage system has sufficient capacity to accommodate growth-related impacts. The collection system works well, and the new sewer lagoons can handle a population of approximately 15,000 (personal communication, Etter 1989). The system could potentially become overloaded in the southern part of the city, but any reconfiguration of the existing sewerage system or development of additional collection in this area would be funded by the city's sewer development fund and by developers (personal communication, Raymond 1989). No significant impacts are expected.

Numerous construction projects have been programmed for accommodating increased usage of the MHAFB sewerage system by immigrating personnel. Several of these projects are shown in figures M4.10-1 and M4.10-2. No significant impacts are expected.

SOLID WASTE. The realignment will create increased demand for solid waste collection and disposal. Both MHAFB and the city of Mountain Home have adequate capacity to accommodate the increased demand. The new landfill located approximately 8 miles from Mountain Home has a use-life of at

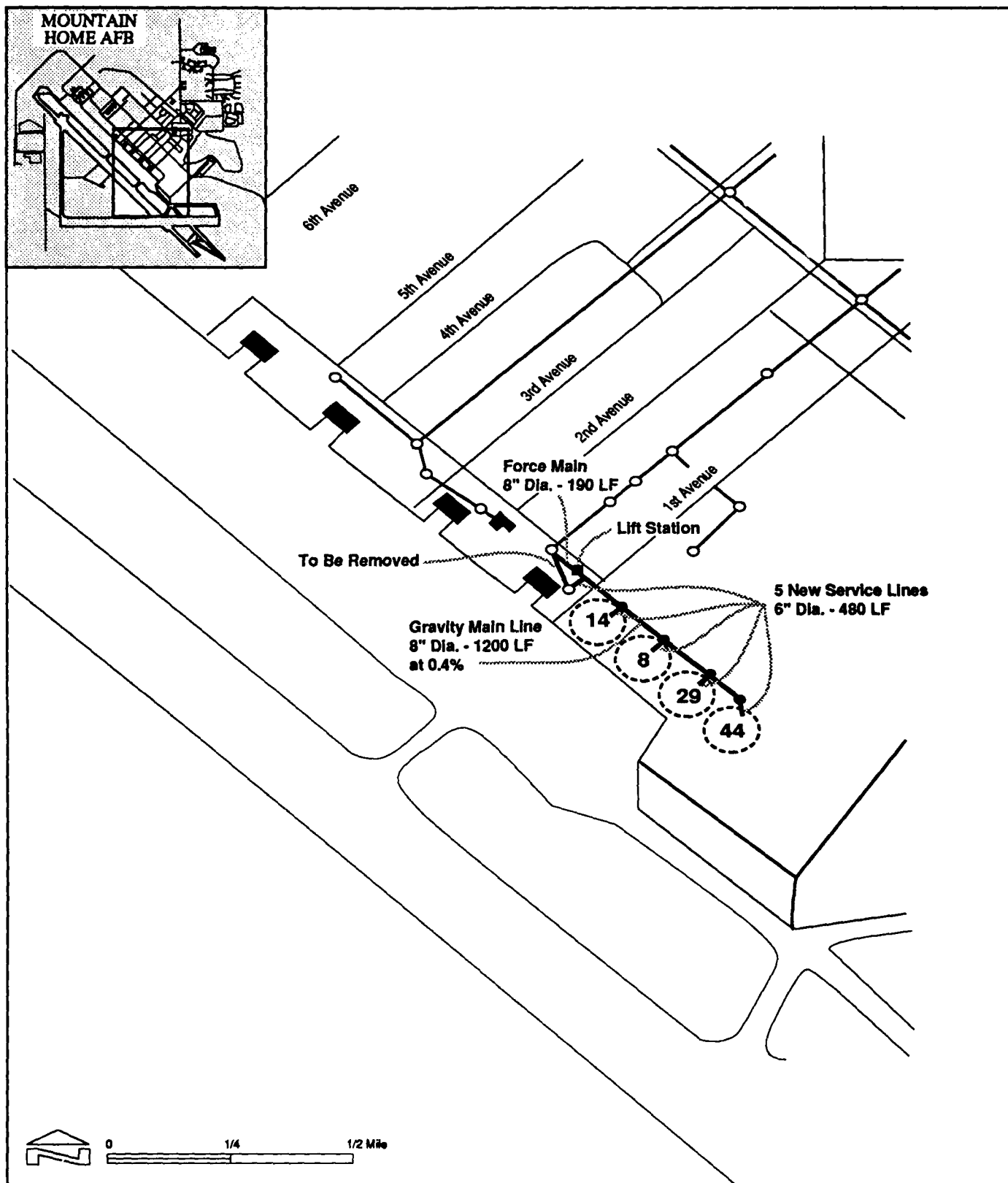


Figure M4.10-1

**SEWAGE SYSTEM CONNECTIONS
FOR BASE REALIGNMENT PROJECTS**

least 30 years and meets all EPA standards. Because recycling is anticipated to be instituted in the area in the near future, the use-life of the landfill probably will exceed 30 years. Therefore, it will provide any additional capacity that may be required and no significant impacts are expected.

POWER. Natural gas and electricity consumption will increase as a result of the realignment. However, both the Inter-Mountain Gas Company and the Idaho Power Company will have sufficient capacity to accommodate increased usage. No significant impacts are expected.

M4.10.5.5 Public Finance

Realignment-related in-migration to the ROI will result in increased revenues and expenditures for Elmore County and the city of Mountain Home. Revenues will be generated through property taxes, sales taxes, miscellaneous taxes (e.g., specific ownership taxes), and state and federal subventions. Expenditures will result from increased demand for public services and capital outlays for enhancing those services. Public finance impacts will be significant if expenditures required for realignment-related growth exceed revenues.

Potential impacts on public finance are being addressed in a fiscal impact assessment (FIA) being prepared by the Office of Economic Adjustment.

M4.10.6 Mitigations

The preceding analysis has identified significant impacts of the realignment on schools and on police and fire protection. These growth related impacts can be mitigated through the implementation of measures described below.

Air Force Participation In and Close Coordination with the Elmore County Impact Steering Committee

The critical first step in successfully managing realignment-related growth is to establish a coordinating committee that represents all the potentially affected jurisdictions. Local coordinating committees are an organizational technique that has been used successfully by a number of communities faced with rapid growth. With the assistance of OEA, this committee - the ECISC - has already been created. The committee will serve as a forum to identify, discuss, and prioritize the issues that are of concern to the affected jurisdictions and will develop ways to address these issues.

In order to address the diversity of local concerns and to obtain broader community inputs, the ECISC will operate through a series of functional or single-interest task forces (e.g., education, housing). These task forces are headed by a member of the committee but include individuals who are interested in a particular area of concern.

Air Force Participation in the Development of a Growth Management Plan and Socioeconomic Monitoring Program

The principal objective of the ECISC is to create the consensus necessary to develop and implement a growth management plan. To do this, the committee must be able to support the research and analysis required to develop a growth management plan. It normally takes from three to five years to develop and substantially execute a growth management plan. The ECISC should also establish a public information program and act as a clearing house for an exchange of information with MHAFB and HQ TAC. It is important that MHAFB and HQ TAC have a point of contact within the city of Mountain Home as realignment-related growth occurs over the next five years.

The entire cooperative planning process requires three to five years -- three years to look at planning only or five years including construction of facilities. Given the uncertainty associated with planning for military-related growth, it is very important to monitor actual progress versus projected activity. A socioeconomic monitoring program, geared to the particular needs of the MHAFB realignment, will allow the planning process to adjust to changing schedules and numbers of people, which in turn, allows the focus to remain on results (i.e., roads, bridges, or schools built) rather than on planning documents.

Utilization of Potential Assistance Programs

The funding to organize, staff, develop, and implement a growth management plan comes from many potential sources. A decade ago, the federal government provided the bulk of technical and financial assistance to communities faced with growth management problems. The U.S. departments of Commerce, Agriculture, and Housing and Urban Development were the major sources of assistance available to communities. Depending on its location, size, and economic status, a community could count on assistance from one or more federal sources. This is no longer the case. Today, a community faced with funding the development and implementation of a growth management strategy must package assistance from many sources. These sources include state governments and private organizations as well as the federal government. State government in many states plays a more active role in development activities than the federal government.

A listing and brief description of some of the federal programs that have proven most helpful in the past to defense-related growth-impacted communities is provided below. No attempt was made to assess the current availability of funds in these programs. Likewise, state and private sources of funding were not explored. A more thorough assessment of potential funding sources should be undertaken before adopting a financing strategy for the coordinating committee's activities.¹

1. The source for much of the information on federal assistance programs was drawn from the Community Impact Assistance Study, prepared by the President's Economic Adjustment Committee, July 1981.

Department of Agriculture: The Farmers Home Administration (FmHA) within the Department of Agriculture provides a range of planning, technical assistance, public works and housing assistance programs which are often applicable to the needs of defense-related growth-impact communities. FmHA's mission is to assist rural communities, and since many defense-related growth communities are located in rural areas, FmHA programs are often a logical assistance vehicle. In ranking projects, FmHA gives priority to projects which benefit low-income, minority and unemployed residents. A defense boomtown, with rapidly rising incomes, may not be competitive with other distressed rural communities.

- o **COMMUNITY FACILITY LOANS/WATER AND WASTE DISPOSAL LOANS AND GRANTS:** The FmHA community facilities program can fund almost any type of facility used in the delivery of public services (health, public safety, administration, recreation, etc.). Due to its scope, this program is a valuable assistance mechanism for defense-related growth communities. The program does not, however, have grant authority. It provides direct low-interest loans.

The Water and Disposal program can fund the installation, repair, improvement, and expansion of rural water and sewer systems. (Water distribution facilities, pipelines, pumping stations, waste collection, and treatment disposal facilities are included under this program.) This program has both grant and loan authority.

The community facilities program can assist communities with populations under 20,000. The water and waste disposal program can only fund projects in communities under 10,000. Both programs require that projects primarily serve (not only benefit) rural residents. Operations and maintenance costs are not eligible for funding.

Both programs require communities to assure that they are unable to fund projects from their own resources or through commercial credit at reasonable rates and terms. Both programs give priority to applications from communities with populations of less than 5,500 and to projects that will enlarge, extend, or modify an existing facility to provide service to additional users and to projects serving low-income communities.

- o **RURAL RENTAL HOUSING:** This program provides direct low-interest loans for the construction, purchase, improvement, or repair of low-income multiple-unit housing.
- o **RENTAL ASSISTANCE PAYMENTS:** This program is similar to the Department of Housing and Urban Development's (HUD) Section 8 program, which may also be used in conjunction with FmHA loan assistance to rental projects. The program provides subsidies to project owners for the reduction of rent for low- and moderate-

income occupants. By statute, the program does not allow discrimination on the basis of employment. Allocations are made on the basis of population and distress factors.

- o **HOME OWNERSHIP LOANS:** This program is also limited to low- and moderate-income families in areas with populations of up to 10,000 (20,000, under certain circumstances). It is also a direct-loan program with interest rates based on the cost of money to the U.S. Treasury with a subsidy provision for reductions down to one percent. Loans may be made for the purchase and repair of existing structures as well as for new construction.

In a Defense-related growth-economy, FmHA's housing programs might be especially useful in assisting citizens who are on fixed incomes; these residents are often those who suffer from an inflationary boomtown economy.

Department of Commerce: The Economic Development Administration (EDA) within the Department of Commerce provides a range of planning, technical assistance, public works, business loan, and economic adjustment assistance in behalf of economically lagging areas. EDA programs have been of particular assistance to Defense growth impact areas in the past in that the grant and loan assistance may be targeted to specific growth impact communities. EDA's principal focus is on economically lagging and distressed communities but its programs do permit assistance to major impact areas.

- o **STATE AND LOCAL PLANNING:** Under Section 302, EDA provides resources to state and local governments to strengthen the public capacity for economic development planning, both at the state and the economic development district levels. Particular encouragement was given to the program toward the formulation of long term economic growth strategies.
- o **TECHNICAL ASSISTANCE:** Under Title III, EDA can provide technical assistance to communities with major growth problems as well as the more normal economic distress situations. Technical assistance need not be limited to areas in eligible development districts. Due to the heavy nationwide competition, Defense growth impacted communities would not likely qualify under this Title III program.
- o **PUBLIC WORKS AND DEVELOPMENT FACILITIES:** Under Title I, EDA assists communities in the construction of public facilities needed to initiate and encourage long-term economic growth. Direct grants and loans are available for such public facilities as water and sewer systems, access roads, rail spurs serving industrial parks, public tourism facilities, vocational schools, and industrial park site improvements. The public works must be reflected in the approved Overall Economic Development

Program for the affected area. The public works program is not the most suitable program for EDA growth impact assistance (see the discussion on the Economic Adjustment Title IX program below) in that this program is directed toward providing a basic infrastructure for long-term economic development in lagging areas.

- o **BUSINESS LOANS:** Under the provisions of Title II, EDA can provide direct loans to sustain industrial and commercial projects in designated development areas. Loan guarantees of up to 90 percent of project costs can also be approved under this program. As in the case of Public Works programs above, business loans are made in designated EDA development areas.
- o **ECONOMIC ADJUSTMENT ASSISTANCE:** The EDA Title IX program is intended to assist communities in meeting the special needs arising from sudden or severe economic dislocation and to meet these needs consistent with sound long-range planning. The Title IX program focuses particularly on serious economic dislocations such as plant closures or military base closures but the program has been used effectively to assist growth impact areas. Economic Adjustment Assistance is not limited specifically to designated development areas and the Title IX program can be targeted into specifically impacted communities.

Department of Defense: The DOD has two programs that have been helpful to Defense impacted communities. They are:

- o **THE OFFICE OF ECONOMIC ADJUSTMENT (OEA):** The OEA, a component of the Office of the Secretary of Defense, provides technical and planning assistance to communities adversely affected by DOD program changes. OEA is also the staff office for the President's Economic Adjustment Committee (EAC) which is chaired by the Secretary of Defense. OEA has already helped establish the ECISC and will be preparing a fiscal impact analysis of the realignment.
- o **DEFENSE ACCESS ROADS (DAR):** The DOD can fund the construction of new roads or improvements to existing roads which provide access to Defense installations. State and local governments are responsible for developing and maintaining public roads, but the DAR program may be used when the Commander, Military Traffic Management Command certifies a road or improvement is important to national defense. Funds from the DAR are provided by the Defense Agency or Military Department through the military construction appropriations. This program provides community assistance but it is limited by the determination of importance to national

defense and appropriation levels. These programs are typically administered by the State.

Department of Education: Financial assistance for school construction and for school operating costs in federally affected areas are provided by Public Law 81-815 and Public Law 81-874 respectively. The major Department of Education programs of importance to growth impacted communities are as follows.

- o **SCHOOL CONSTRUCTION ASSISTANCE:** The Department of Education provides grants under Public Law 81-815 for the construction of school facilities for federally connected increases in student enrollments. The grant levels are equal to the average per pupil school construction costs for the individual state. In recent years, the Public Law 81-815 program has been funded at a very low level in relation to demand.
- o **SCHOOL OPERATING ASSISTANCE:** Public Law 81-874 provides federal assistance for operating costs for federally connected children based on a local contribution rate (LCR) calculation for five representative school districts in the state. Children of federally connected personnel living on the federal facility receive an entitlement equal to 100 percent of the LCR rate while children not residing on the facility receive an entitlement of 45 to 50 percent of LCR. Until 1969, annual appropriations were sufficient to finance the full Public Law 81-874 entitlements but in recent years various funding formulae have been applied on the entitlements for "B" (off-base resident) students. Aside from the annual level of appropriations, there are a few eligibility problems associated with Public Law 81-874 assistance for Defense growth impact areas.

Environmental Protection Agency (EPA): The EPA program for Construction Grants for Wastewater Treatment Works, under the Clean Water Act, as amended, reflects specific statutory and program procedures that can affect timely and effective Federal assistance to impacted communities involving the EPA wastewater facility construction grants program particularly in growth circumstances. This stems from the fact that states are the sole authority on the method used for determining the order in which wastewater treatment projects will be funded. Furthermore, the construction grant regulations include the requirement that "the state shall not consider the projects area's development needs unrelated to pollution abatement, the geographical region within the state, and future population growth projections." EPA's authority in this program is limited to: (1) approval of the priority system the state uses to rank its projects based on adherence to regulations and (2) acceptance of the list produced using the approved state system.

Within the above constraints, the EPA construction grant program has been used effectively to meet the needs of impacted communities in the past. The situations under which EPA has been directly able to assist are (1) in circumstances where compliance problems exist under the environmental acts and (2) in the transfer of DOD impact assistance funds to communities requiring wastewater collection and treatment works.

Department of Housing and Urban Development: Most of HUD's programs are targeted to urban areas experiencing a decline and therefore often are not suited to Defense growth impacted communities. Among HUD programs, the following have been most helpful:

- o **COMMUNITY DEVELOPMENT BLOCK GRANT/SMALL CITIES DISCRETIONARY PROGRAM:** Under Title I of the Housing and community Development Act of 1974 (Public Law 93-383), HUD assists communities in providing the prerequisite development for housing within a suitable living environment and for expanded economic opportunities -- principally for low and moderate income residents. The recipient cities establish the development priorities and may or may not include activities related to growth impacts in their applications. As required by stature, the CDBG Small Cities regulations favor applications from more impoverished communities. These programs are typically administered by the State.
- o **SECTION 8 - HOUSING ASSISTANCE PAYMENTS PROGRAMS:** Under the Housing Act of 1973, as amended by the Housing and Community Development Act of 1974, HUD provides assistance in accordance with Section 8 to aid lower-income families in obtaining adequate housing in private accommodations -- including new units, rehabilitated units, and existing housing units. HUD has been able to accommodate the program to the needs of military growth impacted areas.
- o **MORTGAGE INSURANCE - MILITARY IMPACTED AREAS:** Section 238 (c) of the National Housing Act allows the Secretary of Defense to request special consideration from the Department of Housing and Urban Development for areas impacted by new military base expansions. Upon acceptance by HUD, military families may be included in the analysis of the proposed construction housing market, which might make otherwise ineligible areas eligible for mortgage insurance.

Department of Interior (DOI): The DOI has several programs which have potential use in growth communities.

- o **PARK AND RECREATION TECHNICAL SERVICES (PARTS):** The Recreation Organic Act, Public Law 88-29, provides authority to give technical assistance for park and

recreation purposes. Communities, individuals, and public and private entities are recipients of the services provided by PARTS.

- o **HISTORIC PRESERVATION FUND:** In accordance with the National Historic Preservation Act of 1966 as amended (Public Law 96-515), cultural resources are to be systematically surveyed in the face of any federally financed undertaking.
- o **URBAN PARK AND RECREATION RECOVERY (UPARR) GRANTS:** The UPARR program is targeted by its authorizing legislation, Public Law 95-625, Title X, to distressed urban jurisdictions, primarily including a list of eligible cities and counties. Most of the funds available must be used for rehabilitation of existing recreation facilities, but up to 10 percent of grants may be used to assist innovative recreation programs or facility developments.
- o **LAND AND WATER CONSERVATION FUND:** This program comes under the Land and Water Conservation Fund Act of 1965 (Public Law 88-578), 78 Stat, 897, as amended. The programs provide grants through the states for the acquisition and development of outdoor recreational facilities, parks, and lands.
- o **FEDERAL AID IN FISH AND WILDLIFE RESTORATION:** This is a grant-in-aid program established by law for state fish and game departments. Under the program, 75 percent of the state costs for restoration projects are reimbursed with federal funds.
- o **ROADWAY RIGHTS-OF-WAY:** Under the Federal Land Policy and Management Act of 1976 (Public Law 94-579), Title V, 43 CFR, rights-of-way can provide to local governments to expand road network or utility transmission lines (in cases where a utility may be owned by a town or a city).
- o **WATER AND POWER RESOURCES SERVICE:** The Water and Power Resources Service has experience in the development of water resources projects. This experience provides the service with the background to provide expert technical advice to impacted communities in the development of municipal and industrial water supplies. However, current funding, manpower, and statutory restrictions limit DOI's ability to provide a technical assistance program. While some technical assistance is provided, it is on a small scale and is dependent on existing work loads.
- **Water Resources Development:** Under the Reclamation Act of 1902 and Amendatory and Supplemental Acts thereto - 43 USC 391, the development of municipal and industrial water supplies could be undertaken within existing

organizational and statutory provisions. Present procedure requires approval by Congress of feasibility study, authorizing legislation, and formal repayment contract to repay the cost of the project. Revision to procedures to speed up time required to authorize project and possible elimination or easing of requirement to repay costs would be required.

- **Loan/Grant Program:** Under the Distribution System Loans Act, Public Law 84-130, 43 USC 421; Small Reclamation Projects Act, Public Law 84-894, 43 USC 422, the Service provides loan/grant programs geared to existing irrigation districts. Low-interest loans are available for irrigation projects for periods up to 50 years.

Small Business Administration (SBA): SBA has two financial programs of particular interest. Both local economic development corporations and investment companies can help impacted communities.

- o **INVESTMENT COMPANY:** Small Business Investment Companies (SBIC) organized under Section 301(c) of the Small Business Investment Act finance business growth, modernization, and expansion. Minority Enterprise Small Business Investment Companies (MESBIC) under Section 301(d) assist businesses at least 50 percent owned or controlled by disadvantaged persons. Minimum initial private capitalization is required.
- o **LOCAL DEVELOPMENT COMPANY:** These stimulate growth and expansion of businesses in designated areas. Certified development companies under Section 503 finance long-term fixed assets. The program will help communities create jobs, increase the tax base, expand businesses, and improve community services. The program is flexible. It can be used for city or regional development, neighborhood revitalization, and minority business. Financing is available for land acquisition, building construction, expansion, and renovation, and equipment.

Department of Transportation: The Department of Transportation's federal highway program and the Environmental Protection Agency's wastewater treatment program highlight an important issue in assisting Defense growth impact areas: both programs operate on a formula distribution basis to the states in which the specific community priorities within each state are determined by the states themselves. The Federal Highway Administration also serves as the implementing agency for the Defense Access Highway program which was discussed earlier. The key elements of the Department of Transportation programs are as follows:

- o **FEDERAL AVIATION ADMINISTRATION (FAA):** Individual DOD base actions which interact with community impact assistance programs may affect airway traffic systems on a local basis. In such cases, these can be handled by FAA in its normal routine procedures.
- o **FEDERAL HIGHWAY ADMINISTRATION (FHWA):** The basic concept of federal-aid highway legislation is and always has been that of revenue sharing rather than a grant program. Under this concept, highway funds are distributed on a formula basis and the states are given the responsibility of selecting the highways on which work will be done.

FHWA works closely with DOD through the Military Traffic Management Command (MTMC) in matters pertaining to highways of importance to the national defense. The defense access roads program has served the DOD needs very well over the years, and DOD agencies plan and budget for those needs.

M4.11 WATER RESOURCES

M4.11.1 Regulatory Setting

The following is a summary of the statutes, regulations, and executive orders that help protect water resources and that form the basis for policy guidelines and management practices.

M4.11.1.1 Federal Statutes and Regulations

Clean Water Act, 33 USC section 1251 et seq. Under the Clean Water Act, any point source waste that discharges into waters of the United States requires a National Pollution Discharge Elimination System (NPDES) permit. Section 404 of this act regulates development in streams and wetlands and requires a permit from the U.S. Army Corps of Engineers prior to such activities.

Safe Drinking Water Act, 42 USC section 300f et seq., requires the Environmental Protection Agency (EPA) to establish a program which provides for the safety of the nation's drinking water. Regulations under this act can be found in 40 CFR, section 141 et seq.

Underground Injection Control (UIC) Program, 40 CFR Part 146. As part of the Safe Drinking Water Act, the UIC program establishes regulations for the injection of fluids into wells for storage or disposal which are designed to protect underground sources of drinking water.

Federal Compliance with Pollution Control Standards, Executive Order 12088, requires the head of each executive agency to be responsible for ensuring that all necessary actions are taken for the prevention, control, and abatement of environmental pollution with respect to federal facilities and activities under the control of the agency.

Executive Order 11988 - Flood Plain Management directs that "any federally undertaken, financed, or assisted construction project must provide leadership and take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains." This order requires each federal agency to determine whether the project will occur in a floodplain and to consider alternatives. If no practical alternative is found, it requires minimizing harm and notifying the public as to why the project must be located in the floodplain. It also provides for public review and comment.

Executive Order 11990 - Protection of Wetlands, requires that leadership shall be provided by involved agencies to minimize the destruction, loss, or degradation of wetlands. The order was issued to "avoid to the extent possible the long and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands whenever there is a practicable alternative." Federal agencies are required to provide for early public review of any plans or proposals for new construction in wetlands.

M4.11.1.2 State Statutes and Regulations

Idaho Code, Chapter 2, regulates water rights throughout the state. The constitution and statutes of the State of Idaho declare all the waters of the state, when flowing in their natural channels, including the waters of all natural springs and lakes within the boundaries of the state, and groundwaters of the state, to be public waters. These public waters may be appropriated and put to beneficial use. All water rights within the state are issued on a "first in time, first in right" basis.

Idaho Code, Section 42-233b, allows the State of Idaho to establish a Groundwater Management Area or Critical Groundwater Area where groundwater levels are declining due to overuse of an aquifer. The state may restrict water rights within the boundaries of a groundwater area by issuing permits and approving any additional water usage.

M4.11.2 Issues and Concerns

The realignment of MHAFB can be expected to affect water resources on the base and within the nearby community of Mountain Home. This analysis considers the potential impact on water availability and use, water quality, and water rights within the ROI.

M4.11.3 Significance Criteria

Criteria for determining the significance of environmental impacts on water resources associated with the realignment of MHAFB are based on water availability and use, quality, rights, and applicable regulations. An impact on water resources is considered significant if it will:

- o Reduce water availability to, or interfere with the supply of, existing users.
- o Endanger public health or safety by creating or worsening an adverse health hazard or safety condition.

- o Threaten or damage unique hydrologic characteristics in an area.
- o Violate laws or regulations adopted to protect or manage the water resource system.

It may be possible to mitigate significant impacts to insignificant levels, depending on the availability and effectiveness of specific mitigation measures. Impacts that do not meet any of the above criteria will be considered insignificant.

M4.11.4 Methodology for Analyzing Impacts

The realignment of MHAFFB can be expected to have some impact on water resources in the local area. This analysis describes those potential impacts, evaluates their significance in accordance with the above criteria, and identifies any mitigations which may reduce impacts on water resources to an insignificant level.

M4.11.5 Impact Assessment

M4.11.5.1 Water Availability and Use

The base realignment is expected to have no significant or long-term effects on surface waters in the vicinity of MHAFFB or Mountain Home. Low precipitation in the area (9 inches annual average) results in little surface water runoff, and there are no perennial surface waters on or adjacent to the base. Base realignment activities are expected to have no impact on surface water availability or use in the vicinity of Mountain Home.

The increase of population and activity on MHAFFB will result in increased demand for water from existing groundwater supplies. Construction itself will also temporarily increase water demand on the base. Current and expected groundwater use on MHAFFB are provided in Table M4.11-1. Increased water use associated with the action was forecast using the projected increase in base population provided by MHAFFB and by estimating dependents and day workers based on existing base population characteristics. Where facilities were consolidated and no new water use was added, no additional water demand was included (McGranahan, Messenger, Associates 1989). The historical maximum one-day water demand is 7.09 million gallons. The projected maximum one-day water demand is 8.87 million gallons (McGranahan, Messenger, Associates 1989), an increase of approximately 25 percent. This level is below the base's current allotment of 11 mgd.

The projected 1.78 mgd increase in maximum (one-day) demand may be met by increasing the withdrawal of groundwater by increasing pump rates of existing wells and placing water in storage for peak use. New wells may be developed to augment the existing on-base wells. As discussed in section

Table M4.11-1

**GROUNDWATER USAGE ON MOUNTAIN HOME AFB
(in million gallons per day)**

	<i>Current</i>	<i>With Base Realignment</i>	<i>Percent Increase</i>
Domestic Use ^a	0.88	1.30	48
Golf Course Irrigation ^b	0.33	0.33	0
Other Base Uses	1.24	2.48 ^c	100
Average Daily Consumption	2.45 ^d	4.11	68
Maximum (One-Day) Consumption	7.09	8.87	25

Notes:

- a. On-base population multiplied by 150 gallons per day.
- b. Estimate based on personal communication, Svederus 1989.
- c. Based on proportional increase in aircraft.
- d. McGranahan, Messenger, Associates 1989.

M3.11, both the base and city of Mountain Home are located in a Groundwater Management Area. Any additional withdrawal of groundwater from the underlying aquifer to meet projected water demand resulting from the action will contribute to further water-level declines. However, projected on-base water demand after realignment will remain below the base's current allotment for groundwater withdrawal. The incremental increase in water demand is not expected to have a significant impact on groundwater availability and use in the ROI.

M4.11.5.2 Water Quality

On-base construction will disturb existing groundcover, thereby increasing soil erosion and runoff. However, this impact will be temporary (predominantly during construction) and does not represent a significant impact to surface water quality in the vicinity of the base. Base realignment activities are expected to have no impact on surface water quality in the vicinity of Mountain Home.

There is a potential for impact to local groundwater quality resulting from increased wastewater production associated with the base realignment. Two alternatives have been identified to accommodate the expected increase in wastewater: (1) the current on-base wastewater collection and treatment system may be upgraded, or (2) a portion of the base's wastewater may be piped into the City of Mountain Home's collection and treatment system. These alternatives are currently being evaluated by base and city officials (personal communication, Schuech 1989). Either alternative, or a combination of the two, should be sufficient to ensure that the base realignment results in no adverse impact on local groundwater quality.

M4.11.5.3 Flood Hazards

The potential for flooding on MHAFFB is minimal, and the action is not expected to increase flood hazards on the base.

A 100-year floodplain has been identified within the city of Mountain Home. While the base realignment may result in some increase in population within the floodplain, these people are expected to reside in already-existing houses. The action would have no significant impact on the flooding hazard within the floodplain.

M4.11.5.4 Water Rights

The base realignment is expected to have no impact on water rights in the City of Mountain Home. The city currently owns more shares than it uses to tap underlying groundwater supplies, and anticipates no problem meeting increased water demand due to the projected increase in population associated with the base realignment (personal communication, Raymond 1989).

Although MHAFB owns sufficient water rights to supply its current water needs, this allotment may not be enough to meet the increased water demand of additional base personnel associated with the realignment. The base is expected to construct approximately 430 units of additional on-base housing to accommodate the projected increase in personnel (SAIC 1989). In order to supply water to these units, the base must file for additional permits and water rights from the State of Idaho (personal communication, Pachner 1989).

Since the base draws its water from an aquifer within a Groundwater Management Area (refer to section M3.11), the state has the right to deny or restrict additional groundwater pumping. However, in these areas, the state generally denies requests for irrigated agriculture, not rights for domestic or municipal water use. The state is not likely to deny the additional water rights needed to provide base personnel with domestic water. If the base is unsuccessful in obtaining additional water rights, the U.S. Air Force has the option of buying water rights from private individuals and diverting water onto the base from outside sources.

M4.11.6 Mitigations

No significant impacts on water resources due to the base realignment have been identified; therefore, no mitigations beyond the need for additional wells and planned improvements to the wastewater collection and treatment process are recommended.

M4.12 SAFETY

M4.12.1 Regulatory Setting

The following federal laws, policies, and regulations and county ordinances apply to public safety for MHAFB activities. This regulatory framework provides the guidelines and management practices to minimize adverse impacts resulting from aircraft operational hazardous materials management.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and Superfund Amendments and Reauthorization Act of 1986 (SARA). Provide for liability, compensation, cleanup, and emergency response for hazardous substances released into the environment and the cleanup of inactive hazardous waste disposal sites.

Resource Conservation and Recovery Act of 1984 (RCRA). Regulates storage, transport, treatment, and disposal of hazardous waste that could have an adverse effect on the environment.

Federal Water Pollution Control Act (FWPCA). Provides for water pollution control activities to eliminate pollution discharge.

Solid Waste Disposal Act (SWDA) and amendments of 1980. Amends RCRA with addition of regulation of energy and materials conservation and the establishment of a National Advisory Council.

Toxic Substance Control Act (TSCA). Principally regulates PCBs.

29 CFR 1926.58, Occupational Safety and Health Administration (OSHA) Asbestos Standard: Lists federal requirements during construction activities for handling and removal of asbestos from equipment and building structures.

40 CFR 763, Environmental Protection Agency (EPA) Asbestos Hazard Emergency Response Act (AHERA) of 1986: Applies directly to asbestos in schools, but has been used for modeling the MHAFB Asbestos Management Plan.

Airport Hazards Zoning Ordinance, Elmore County, Idaho: Was passed to control land development and use surrounding MHAFB and its approach and departure zones.

M4.12.2 Issues and Concerns

Realignment of MHAFB raises the following issues:

- o The increase of base housing units will put an increased burden on the structure fire capacity of the base fire protection services with present equipment, staffing, and equipment location.
- o Many older base structures were constructed in the 1950s, 60s, and early 70s when asbestos-containing building materials were in common use. Modification or demolition of these structures will cause a disturbance of these materials and a release of asbestos into the atmosphere.
- o An increase in the number of sorties will increase the risk of a mishap in the southwestern region of Idaho and the northern region of Nevada.
- o An increase in the number of sorties will also increase the number of bird strikes that could lead to significant aircraft damage or an aircraft mishap.
- o Additional aircraft operations and maintenance will generate additional hazardous materials.

M4.12.3 Methodology for Analyzing Impacts

Air Force regulations already exist giving requirements for the amount and types of equipment that is necessary for the size of the base and the numbers and types of aircraft based at the airfield. This standard also sets distances and response times for response to base structure fires. Air Force Manning Standards 4425, 4426, and 4427 specify the staffing authorized for various levels of equipment and numbers of response stations authorized.

The methodological approach used for the analyses of impacts related to hazardous materials associated with realignment activities at MHAFB is to: (1) identify locations where the realignment may influence or affect hazardous materials generation or management; and (2) assess impacts associated with the use and storage of hazardous materials at MHAFB using the significance criteria published as part of each of the reference laws pertaining to hazardous materials management.

The response to asbestos is controlled by the OSHA construction standard 29 CFR 1926.58 and by the base's 366 TFW MHAFB Asbestos Management Plan. Both the OSHA standard and the Asbestos

Management Plan were, in turn, molded and shaped by the EPA's 40 CFR 763 Asbestos Hazard Emergency Response Act (AHERA) of 1986.

The risk of increasing the rate of aircraft mishaps is analyzed by a review of the AICUZ Report that evaluated the effects of aircraft noise and accident potential by aircraft type.

Air Force regulations require all bases to develop a BASH plan and estimate the number of bird strikes anticipated per one million NM flown. The risk is also evaluated on the bird strike data that have been collected since 1980 at MHAFB.

M4.12.4 Significance Criteria

- o If the fire protection requirements generated by the realignment exceed the current level of service, the impact would be significant.
- o If an inadvertent release of friable asbestos occurred during the demolition or modification of a structure, this localized impact would be considered significant.
- o If the public or environment are inadvertently exposed to hazardous or toxic materials, this localized impact would be considered significant.
- o If the increased incidence of bird strikes at MHAFB results in a substantially increased risk to public safety, the impact would be significant.
- o If increased flight operations at MHAFB result in a substantially increased risk to public safety, the impact would be significant.

M4.12.5 Impact Assessment

M4.12.5.1 Flightline Fire/Crash Safety and Base Structure Fire Protection

The base realignment will double the current number of aircraft based at MHAFB. Additionally, an increased number of aircraft from other bases will also use the airfield for training sorties. This additional use of the airfield will only marginally increase the equipment and personnel allowed by Air Force regulations and manning standards.

The base realignment will also require an additional 208-space dormitory for single personnel and 432 family housing units. More family housing units may be required by 1995. With this additional housing space development, additional structural fire-fighting equipment will be necessary.

The family housing being planned will be a mixture of single, duplex, triplex, and quadruplex units. Time and distance requirements (see section M3.12.4) require that multifamily housing units be no more than 3 miles or 6 minutes from the equipment facility using the shortest practical route. The shortest practical route from the current equipment facility to the area planned for the new housing units is right at 3 miles on the primary route (see Figure M4.12-1), but it takes at least 7.5 minutes to reach this area in winter.

A secondary route was also planned (see Figure M4.12-1) because the primary route lies along the busiest traffic route on base. The secondary route planned is 3.1 miles and requires 10 minutes to reach the proposed housing area.

Since the current level of fire protection service would be exceeded by realignment-generated demand, there would be a significant impact. However, the implementation of mitigative measures described in M4.12.6 would reduce the impact to insignificance.

M4.12.5.2 Asbestos-Containing Building Materials

The base realignment process will require that some buildings be modified or demolished. While the total base structure asbestos assessment process has begun, it is not yet complete. When the assessment process is complete and all known asbestos is quantified in the buildings designated for modification or demolition, the cost for removal will be quantifiable. Demolition will be done in compliance with applicable laws and regulations, including OSHA and the National Emission Standards for Hazardous Air Pollutants (NESHAPS).

Since the base has an asbestos-permitted landfill already open, the impact to the environment will be small. If the guidance for removals found in the Base Asbestos Management Plan is strictly followed, the risk of breathing asbestos fibers by building occupants is very low.

M4.12.5.3 Bird-Aircraft Strike Hazard

The BAM graph for MHAFB (see Figure M3.12-2) shows a relatively low number of predicted waterfowl strikes with less than 5 predicted waterfowl strikes per 1 million NM of flight. For the years 1986 to 1988, a total of 20 bird strikes has been recorded (see Table M3.12-4) with a total cost of \$15,090 in damage. This averages out to 7 bird strikes and \$5,000 in damage yearly with current flight activities.

The increase in aircraft operations would mean a potential increase in bird strikes and aircraft damage. The effect on waterfowl and other bird populations is small and the history of bird

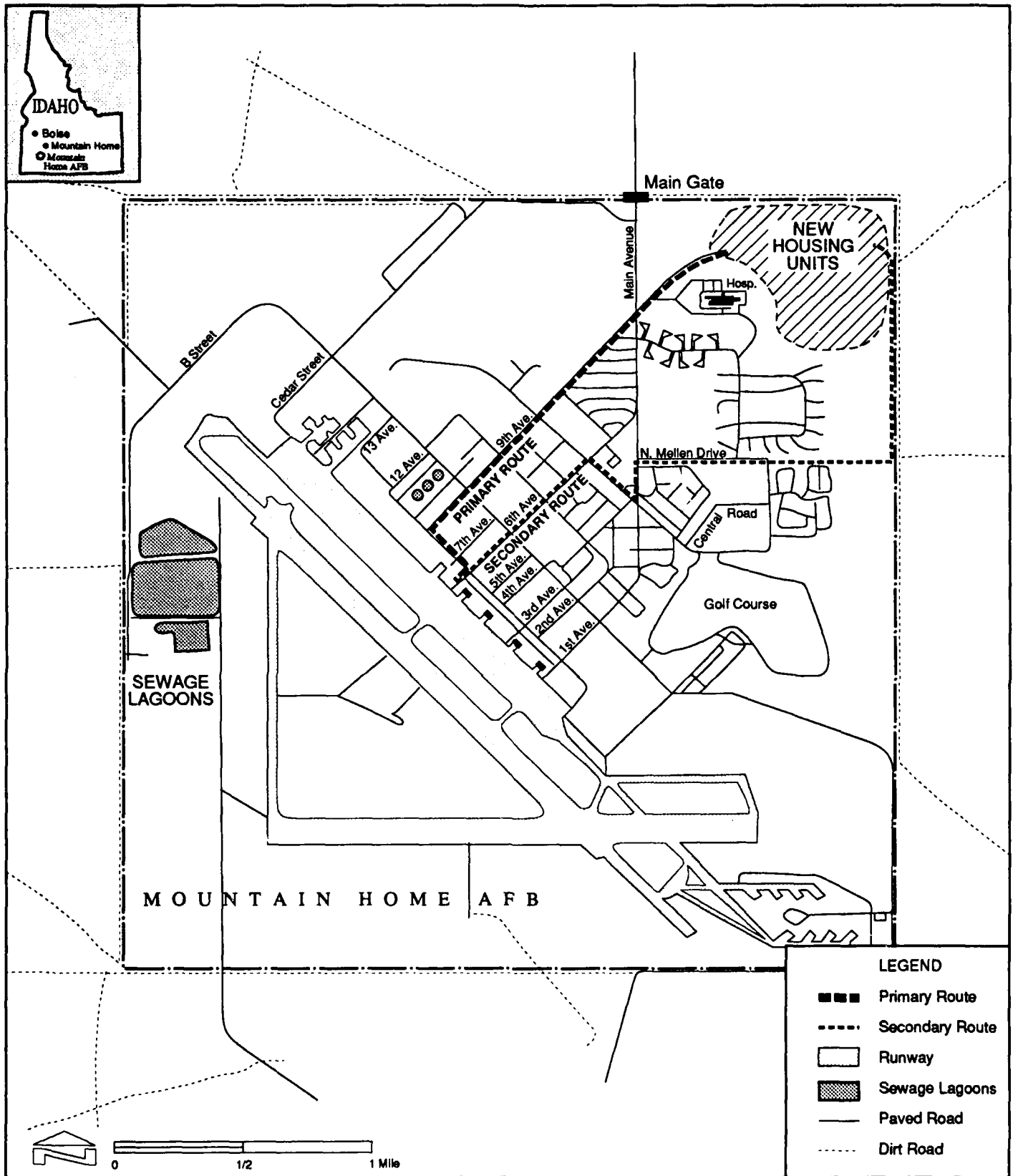


Figure M4.12-1

**EMERGENCY RESPONSE ROUTES
NEW HOUSING AREA**

strike incidents at MHAFB indicate that while the damage cost is moderate, the risk to public safety from bird strike mishaps is small.

M4.12.5.4 Mishap Potential

The planned action will result in the relocation of 35 F-111A aircraft and the realignment of 94 F-4E/G aircraft at MHAFB. As discussed above, the relocation would increase the number of annual operations flown in the Mountain Home terminal area from approximately 60,000 to approximately 140,000. Air Force records indicate that the F-4 aircraft has a slightly higher mishap rate than F-111A and EF-111A aircraft. F-4 aircraft had 14 Class A mishaps and four Class B mishaps in 324,000 hours of flight time during the period between 1975 and 1986. This equates to approximately 4.32 Class A mishaps and 1.23 Class B mishaps per 100,000 flight hours. There are no historic mishap data available regarding F-4 aircraft operations in the Mountain Home terminal area due to limited past use. With both the increase in number of sorties and the increased mishap rate, there would be a measurable increase in mishap potential. Since this region of Idaho is sparsely inhabited, in the event of a mishap the increased risk to loss of life is moderate, but the risk of range fire at some seasons of the year is high.

Current ATC procedures for aircraft operating in the Mountain Home terminal environment should be adequate in managing the "real time" air traffic into and out of MHAFB and Mountain Home Municipal Airport. These procedures should reduce the likelihood of potential near-misses and mid-air collisions between civil and military aircraft.

M4.12.5.5 Hazardous Materials and Hazardous Waste

The realignment activities at MHAFB are not anticipated to produce any adverse impacts associated with the storage and use of hazardous materials. The Air Force, and in particular MHAFB, has established policies and procedures for the proper management of hazardous materials. These guide and direct all staff to properly identify, use, control, store, treat, and dispose of materials considered toxic or hazardous. The existing capacity of the MHAFB infrastructure to properly manage, store, treat, and dispose of hazardous materials is sufficient to accommodate the expected additional volume resulting from the addition of 59 aircraft. No new types of hazardous materials are expected to be generated by the realignment of the 35 TFW.

The realignment activities at MHAFB would not adversely affect actions at any of the Installation Restoration sites. Further, realignment activities would not be expected to use either PCBs or asbestos-based materials.

M4.12.6 Mitigations

M4.12.6.1 Flightline Fire/Crash Safety and Base Structure Fire Protection

According to Air Force regulations, the additional aircraft to be based at MHAFB would warrant additional equipment to be permanently assigned. The base currently has a P-19 crash truck that is listed as a "floater" and can be shared between bases. If it is permanently assigned to the base, the equipment needs could be met with no additional personnel necessary.

The access to the new projected housing area cannot be made within the time restriction of 6 minutes from the current fire equipment station. An additional firehouse would be necessary. The new facility would require both a P-8 and a P-12 structural fire truck and 12 personnel split over two 24-hour shifts to man the equipment.

The best location for an additional firehouse would be in the vicinity of the new base hospital. It would then be close to both the present family housing units and the new housing unit area. The cost of both the building and equipment would be approximately \$460,000.

M4.12.6.2 Asbestos-Containing Building Materials

By closely following the Base Asbestos Management Plan, the risk of liberating asbestos fibers into the air during removal, transportation, or disposal at the base-permitted landfill would be minimized.

M4.12.6.3 Bird-Aircraft Strike Hazard

By following the BASH Plan closely, the additional aircraft at MHAFB should not endanger public safety additionally and should have only a limited effect on waterfowl and other bird populations.

M4.12.6.4 Mishap Potential

Currently, a yearly disaster response operation drill is conducted with all operation's sections on the base and all necessary state and local agencies that would be involved in the response. If the drill was conducted semi-annually and response to an aircraft crash practiced at least once yearly, the risk from loss of life and property destruction would be reduced. As all parties involved in a response become more familiar in the operation of responses, the reaction time would be decreased and losses reduced.

M4.12.6.5 Hazardous Materials and Hazardous Waste

There are no anticipated adverse impacts and therefore no recommended mitigations.

**M5.0 UNAVOIDABLE ADVERSE IMPACTS:
MOUNTAIN HOME AIR FORCE BASE REALIGNMENT**

M5.1 AIRSPACE MANAGEMENT

There will be significant impacts to airspace in the vicinity of MHAFB as a result of the realignment of Air Force units at MHAFB. However, these impacts can be mitigated through enhanced ATC capability at MHAFB and communication and coordination with the FAA. No unavoidable adverse impacts are anticipated.

M5.2 AIR QUALITY

The results of the analysis of construction activities at MHAFB indicate that adverse, short-term impacts would occur from the increase in construction equipment and fugitive dust emissions. However, with the mitigation measures identified for these emission sources, no significant air quality impacts would be expected.

The operational analysis of the realignment determined that adverse, short-term impacts would occur from an increase in motor vehicle and aircraft emissions. However, since the total pollutant impacts from these sources would not exceed any NAAQS, no significant air quality impacts would be expected. No unavoidable adverse impacts are anticipated.

M5.3 NOISE

The action will result in a substantial increase in landing and takeoff operations at MHAFB and aircraft operations in the MHAFB vicinity. This will also include an increase in the number of night-time operations. However, increased noise in the MHAFB vicinity as a result of the realignment would not significantly impact local sensitive receptors. No unavoidable adverse impacts are expected.

M5.4 BIOLOGICAL RESOURCES

Construction of facilities on MHAFB would result in an unavoidable loss or alteration of vegetation and wildlife habitat on about 354 acres, but this is predicted to have an insignificant impact on these resources. Increased flight activity at the base would increase the frequency of noise events in the BOPA and the potential for bird mortality from collision with aircraft. This flight activity would adversely affect birds, particularly raptors, as well as individuals of other species. Impacts, however, are predicted to be insignificant except possibly mortality of raptors. Application of the BOPA management plan is expected to minimize these impacts. Construction in the city of Mountain Home

and recreational activities of the in-migrants resulting from realignment would adversely affect wildlife. Construction in the city of Mountain Home could have significant impacts on wetlands, riparian vegetation, and wildlife if sensitive habitats are not avoided. Recreational activities could have significant impacts on raptors in the BOPA and on wildlife management by the IDFG. The mitigative measures described in section M4.4.6 would help ensure that there are no significant impacts.

M5.5 CULTURAL RESOURCES

Population growth generated by the realignment would likely result in increased recreational use of the environment. Vandalism, illegal excavation and artifact collecting, and vehicular impacts from ORV use are expected to reduce the number and integrity of cultural resources (including Native American resources) within southwestern Idaho. Although it is possible to design and implement a plan to monitor certain cultural resources, periodically collect data on their condition, and provide for additional protection or mitigation should the need arise, the large area over which impacts are expected would make it impossible to protect all sites from such impacts. Increased recreational activities in the region will also increase the potential for brush fires and the need for rehabilitation, which can adversely affect archaeological and historical sites. For large fires, these impacts would be significant. The overall impacts on cultural resources resulting from disturbances associated with increased recreational use of the region would be significant.

Data recovery excavation techniques used in archaeological mitigation are necessarily destructive processes that rarely involve the complete excavation of sites. Whereas excavating portions of sites is usually sufficient to recover a scientifically adequate sample, the destructive nature of the excavation process will result in an unavoidable, although limited, loss of data. This loss is considered insignificant compared to losses from recreation-related impacts.

M5.6 VISUAL RESOURCES

On-base construction and increased aircraft operations are predicted to result in negligible impacts to visual resources. Specific mitigations of potential impacts to visual resources in the city of Mountain Home stemming from realignment-induced population growth cannot be determined until the location, number, type, and size of the additional residential units and facilities have been identified. However, community-oriented mitigations have been outlined in section M4.6.5. If implemented, these measures could reduce the impact to the area's visual resources to insignificance. Therefore, unavoidable adverse impacts to visual resources are not anticipated as a result of realignment.

M5.7 EARTH RESOURCES

Mitigation recommendations for soil erosion resulting from MHAFB realignment construction activities have been outlined in section M4.7.6. These recommendations, if implemented, will minimize but not eliminate soil erosion resulting from construction activities.

Indirect adverse impacts to paleontological resources may occur as a result of the increased population's recreational use of the area containing paleontological resources. A mitigative plan to reduce these impacts is detailed in M4.7.6. These measures will reduce adverse impacts on paleontological resources, but will not prevent them. Similarly, the increase in recreational use of the region could result in adverse impacts on cave resources. These impacts can be reduced by educational programs to increase public awareness of the importance and fragility of cave resources.

Construction materials (e.g., sand and gravel) will be required for construction of new facilities and houses. However, the small quantities required relative to the abundance of these materials in the area are not expected to have any adverse impact. In the event that any new sources of construction materials have to be developed, areas containing paleontological resources should be avoided.

M5.8 LAND USE

The majority of all significant impacts on land use can be mitigated to a level of insignificance. To disperse growth-related effects, the anticipated need for new housing in the city of Mountain Home vicinity could be met by developing several separate projects. Increased recreation demand at popular excursion group locations could be controlled by regulating group use of such sites. Increased urban recreation demands can be mitigated by providing adequate assistance to acquire funding for required recreation projects.

Increased ORV use stemming from realignment-induced population growth will exacerbate existing environmental and land management problems. Mitigation measures, such as those identified in sections M4.4, M4.5, and M4.8, could ameliorate the impacts of increased ORV use. However, it is unlikely that these measures would reduce the impacts to a level of insignificance.

M5.9 TRANSPORTATION

The base realignment will cause an increase of vehicular traffic in and around the city of Mountain Home. The only substantial increases would occur along certain routes during the peak morning and afternoon commuting hours; however, mitigative measures are available to diminish any problems. The most heavily congested areas are a current problem, i.e., improvements are needed regardless of the realignment, and the city already has projects underway to rectify the situation.

An increase in accidents is virtually unavoidable whenever users are added to a roadway system. While it is expected that the city of Mountain Home will experience an increase in accidents, accident rates are not expected to change. No unavoidable adverse impacts are expected.

M5.10 SOCIOECONOMICS

Population growth in the ROI will create additional demand for housing, community services, and utilities. The current and projected level of housing stock is not sufficient to accommodate the needs of in-migrants associated with the realignment. In addition, the capacity of the public school system in the ROI is not adequate for meeting the increased demand for education. Since additional personnel and facilities will be required to maintain current levels of service, police and fire protection will also be significantly impacted by the planned realignment. Implementation of mitigative measures described in section M4.10.6 would reduce the impacts. Other socioeconomic resources, such as health services and utilities, will not be significantly affected.

M5.11 WATER RESOURCES

Adverse impacts to water resources may occur as a result of increased water demand due to the increased base population. Recycling water and limiting the use of water for irrigation or landscaping on the base will minimize the increased consumption of groundwater resources in the ROI.

M5.12 SAFETY

While the risks from bird-aircraft strikes can be reduced using the BASH program, they cannot be eliminated. With the increase in aircraft training hours, there would be some increase in bird strikes and thus some unavoidable adverse impact. Furthermore, there would be an increase in mishap potential due to the four-fold increase in flying operations in the Mountain Home terminal area.

The use of hazardous materials at MHAFB is likely to increase as a result of the realignment action. This is not expected to result in unavoidable adverse impacts.

6.0 CUMULATIVE IMPACTS

The realignment of MHAFB and the proposed expanded range capability are two of several actions proposed to be implemented in the region at approximately the same time. The cumulative impacts of all projects, programs, and plans must be addressed to provide decisionmakers with adequate information. Cumulative environmental impacts are the sum of all the incremental impacts resulting from a proposed action and other presently proposed or reasonably likely projects or actions. The individual impacts of the projects may be minor, but collectively they may pose significant impacts.

The projects considered in the cumulative analysis include (1) new or upgraded facilities at the Idaho Army National Guard Orchard Training Area (OTA), (2) rangeland improvements for domestic livestock grazing, (3) mining developments, (4) transmission lines, (5) land withdrawal by Congress for inclusion in the wilderness or wild and scenic river systems, (6) new dams on the Snake River, and (7) a new tourist attraction at Grasmere. Each of these is described briefly below followed by the impact analyses for each resource.

Orchard Training Area. The Army National Guard has proposed to upgrade or construct three training facilities on the OTA, and an EIS was prepared for this action (CH2M Hill 1988). The proposed action includes (1) upgrading the multipurpose range complex (MPRC), (2) constructing an on-site ammunition storage point (ASP), and (3) constructing an on-site mobilization and training equipment site (MATES). Upgrading the MPRC would involve loss of about 2 acres of wildlife habitat, some additional water and electricity consumption, and creation of a few jobs. Construction of the ASP and MATES would result in loss of 17 acres of wildlife habitat, withdrawal of 200 acres of grazing land, use of 3 million gallons of water a year, and create 75 permanent jobs and 130 temporary (12 to 15 months) construction jobs. The projects would add \$1.5 million to the local economy each year and save 11,000 man-hours plus \$500,000 in fuel and equipment per year. The OTA is used for ground maneuvers and artillery practice, and it has restricted airspace associated with it. Neither of these would change as a result of the realignment of MHAFB or a proposed expanded range capability.

Rangeland Improvements. The BLM and private ranchers are continually modifying the rangeland to increase livestock production. These activities include seeding after burns, installing/maintaining water pipelines, putting in fences, and removing sagebrush. Disturbance is small at each water development or fence site but is spread throughout most of southwestern Idaho. Seeding and sagebrush clearing, however, are generally on moderate to large tracts of land and involve use of equipment such as drill seeders and brush hogs or disks pulled by caterpillars. The seeding occurs after range fires or sagebrush removal to restore the grazing capacity of burned areas or to create new areas for grazing from areas that were previously sagebrush and other native species. Fires usually occur every year, and therefore, the reseeding goes on every year and will continue into the foreseeable future.

Mining Developments. Grefco is in the process of developing a diatomaceous earth mine just north of Dickshooter Ridge at T 12 S, R 2 W, S 3. Access is from Grand View along a road that the company recently upgraded. Grefco also has other mining claims in southwestern Idaho.

Transmission Lines. Pacific Power and Light is in the process of constructing a power line across the study area.

Land Withdrawal. A number of wilderness study areas (WSAs) occur in southwestern Idaho, southeastern Oregon, and northern Nevada, particularly along the major river canyons. Some of these WSAs are being recommended for wilderness designation. In addition, portions of the Bruneau, Jarbidge, and Owyhee rivers in Idaho have been recommended for inclusion in the National Wild and Scenic River System, and a national park has been proposed by environmental organizations for the Owyhee River canyonlands. If these are acted upon by Congress, land use would change in the study area.

Dams on the Snake River. Two dams have been proposed for the Snake River: Dikes Dam and A. J. Wiley Dam. These are located between Glens Ferry and Bliss.

Grasmere Tourist Attraction. Webb Standards is planning an old west town tourist attraction for Grasmere. This would involve multiday wagon train rides from Grasmere to Silver City. Thousands of tourists are predicted to visit this attraction.

Idaho Air National Guard Aircraft. The IANG expects to receive 6 RF-4 aircraft in fiscal 1990. These aircraft will be based at Gowen Field in Boise.

6.1 AIRSPACE MANAGEMENT

Combining the potential impacts of other projects with the effects of the realignment and proposed expanded range capability would not generate significant impacts on airspace management. None of these other actions would involve increased use of airspace in the study area.

6.2 AIR RESOURCES

The air quality impacts identified for project construction and operation activities within the study area, when combined, would not be substantially larger than those already analyzed. Since the project areas associated with other actions are separated by large distances, air emissions occurring in one area would be well dispersed and would not substantially interact with air emissions in another area to increase ambient pollutant concentrations. Additionally, there are no reasonably foreseeable future sources of substantial air emissions proposed that would increase ambient pollutant concentrations

within the study area. As a result, cumulative impacts are expected to be similar to those identified for individual activities associated with the MHAFB realignment and a proposed expanded range capability.

6.3 NOISE

The significance of noise impacts would not be affected by combining the effects of other projects with those generated by the realignment and proposed expanded range capability. None of these other actions would involve increased aircraft operations. In addition, construction-generated noise resulting from these other actions would be short term and insignificant.

6.4 BIOLOGICAL RESOURCES

Impacts of the realignment and proposed expanded range capability would be additive to those from the other proposed projects in the study region. Power line construction, OTA alterations, BLM/private rancher rangeland modifications, and the proposed expanded range capability would have additive effects on vegetation and wildlife through combined habitat loss or alteration. A proposed expanded range capability has the potential to result in much greater impacts than any of the other projects, particularly construction and OTA alterations. Rangeland modifications, however, could, in the long term, affect areas as large as an expanded range complex. One of the major issues is cumulative impacts on birds of prey. The study region provides abundant nesting and foraging habitat for these birds, but data for use of areas outside the BOPA are limited. Effects of ranching activities and low-altitude aircraft on raptors are poorly known for the study area so it is difficult to assess quantitatively how additional disturbance would affect the birds. Increased flight activity, however, would add to the existing potential for mortality through collision with aircraft, particularly when the birds are courting.

Another issue is the cumulative impact on wildlife management that increasing the amount of restricted airspace and of land with limited access would have.

6.5 CULTURAL RESOURCES

Combined impacts from MHAFB realignment, development of an expanded range, and the projects listed in section 6.0 would reduce the number of undisturbed cultural resources in southwestern Idaho. Fragile resources, already disturbed by such activities as ORV usage, grazing, and vandalism, are likely to be further degraded by the combined impacts. As noted in section M5.5, increased unrestricted recreational use of the environment stemming from population growth associated with the realignment is expected to result in unavoidable significant impacts to cultural resources.

Activities at the Idaho Army National Guard Training Area, range modifications, and the dams on the Snake River represent the most extensive of the ongoing and proposed undertakings in the region. In addition to improvement and construction of facilities, the Training Area receives use for maneuvers and gunnery practice -- both of which can affect cultural resources. However, a recent inventory (Addington 1987) and establishment of a monitoring program have markedly improved protection and treatment of cultural resources within the area. Although numerous, most BLM range modifications involve small areas and limited disturbance. Moreover, the BLM promotes avoidance of impacts to cultural resources wherever feasible. The other extensive projects -- two dams on the Snake River -- are planned for an area with abundant and diverse cultural resources. If approved and constructed, the dams and the associated raising of reservoir levels would undoubtedly impact cultural resources. While this action would result in diminishment of the resource base, the scientific studies (e.g., evaluation, data recovery) prompted by impacts to cultural resources probably would provide substantial information on the history and prehistory of the area.

With the exception of Congressional designation of wilderness areas and wild and scenic rivers, the other proposed projects and undertakings lack sufficient scope to result in appreciable degradation of the region's resource base. Creation of wilderness areas would afford increased protection to the cultural resources they contain.

The cumulative projects are unlikely to cause extensive loss of cultural resources and information. Cumulative impacts are not anticipated to be markedly greater than realignment and proposed expanded range capability impacts, and most of these impacts can be reduced to an insignificant level with measures outlined in sections M4.5.5 and S4.5.5 and Appendix G.

6.6 VISUAL RESOURCES

The other proposed projects could have localized impacts on visual resources, but would not contribute to overall degradation of the resources in the study area. These projects are predominantly located on BLM lands and the BLM thus would require impact assessment and identification of feasible mitigation measures to significant impacts on visual resources. The proposed land withdrawal for wilderness and wild and scenic river designation would, in fact, serve to protect the visual resources of the area. Realignment activities would not result in significant impacts to the visual resources of the base and its environs. Increased overflights associated with the proposed expanded range capability are anticipated to result in significant impacts to visual resources, but adding these to the limited impacts of other local projects would not increase the level of impacts.

6.7

EARTH RESOURCES

Impacts to earth resources due to the realignment of MHAFB and a proposed expanded range capability would be supplemental to impacts resulting from other proposed projects or actions in the region. Construction activity will increase the chance for soil erosion locally in the other project areas, but the large distances separating these projects from MHAFB and a proposed expanded range capability will diminish cumulative impacts. Increased population growth due to other projects (e.g., Grasmere tourist attraction) may produce additive indirect impacts to paleontological and cave resources as described in sections S5.7 and M5.7. Additionally, the possible withdrawal of public lands for wilderness study, for inclusion in the wild and scenic river system, and for national park status will create impacts additive to those associated with a proposed range with expanded capability. These withdrawals would affect mineral exploration and the development of mineral claims.

6.8

LAND USE

Impacts resulting from MHAFB realignment, the proposed expanded range capability, and the other projects identified in this analysis could have some cumulative land use effects. The growth at the Orchard Training Area would contribute to the growing population base, which increases recreation demand. New tourist attractions in the vicinity would attract people to the area and further impact the wilderness qualities of solitude and naturalness. Rangeland improvement projects would be adversely affected in exclusive use ordnance impact areas. The other projects involving changes in land use status could also affect these improvement efforts, although the cumulative impacts would not be substantial.

Because an expanded range area, if created, could conflict with mining development projects and transmission line routing, these other projects could be required to explore other areas or use other routings. In so doing, land use in these other locations may be affected. Although the change in location might result in additional land use impacts, they would not be markedly greater than those resulting from the proposed expansion of range capability.

Conflict potentially exists between the proposed expanded range capability and other land withdrawals under consideration in the area. A number of wilderness study areas are within the ground disturbance ROI. In addition, portions of the Bruneau and Jarbidge rivers have been recommended for inclusion in the wild and scenic rivers system, and a national park has been proposed for the Owyhee River canyonlands. If the expanded range capability overlaps with any of these other proposals, the suitability of the lands for wilderness designation may be impaired.

6.9 TRANSPORTATION

Of the proposed projects described, none should have significant impacts on the transportation systems in the ROI when combined with effects of the realignment and proposed expanded range capability. Some increases in traffic may occur as a result of these projects, but increases will be either temporary or small enough so that no significant impacts will result.

6.10 SOCIOECONOMICS

Potential impacts of the realignment will not change substantially when combined with the effects of other proposed projects. Realignment-generated impacts upon schools and police and fire protection will be significant, irrespective of the other projects; however, impacts upon other resources in Elmore County, such as health services and utilities, will not be significant when combined with effects of other projects in the region.

Increased revenues generated by construction activities at the Orchard Training Area will help offset reductions in income generated by the proposed expanded range capability. If expansion of range capability restricts future revenue-generating projects in the region, such as mining, recreation and tourist activities, unavoidable adverse impacts would occur. Limiting installation of power lines because of potential land withdrawal may impact the level of service provided to residents and businesses in the region. In sum, combining the effects of other projects in the region with the effects of the proposed expanded range capability could lead to unavoidable adverse impacts.

6.11 WATER RESOURCES

No significant, unmitigable impacts on water resources due to the base realignment have been identified. However, the projected increase in on-base population will necessarily result in increased demand for and use of groundwater within the ROI, a region that has been designated by the State as a Groundwater Management Area. Other proposed actions in the vicinity of the base, particularly activities at the Idaho Army National Guard Training Area, will contribute to the increased demand for groundwater in the ROI. Construction of new facilities at the training area is projected to result in the additional use of 3 million gallons of water per year. This is a negligible amount of water given that the current (maximum) one-day use on the base is 7.09 million gallons and is projected to increase to 8.87 million gallons (see section M4.11.5.1). Therefore, the cumulative impact on groundwater use is essentially the same as the realignment-specific impact identified in section M4.3.

Unlike the base realignment, a proposed expanded range capability may result in an overall decrease in water use in Owyhee County. Public access would be restricted within the impact area boundaries, and this restriction may prevent some individuals from utilizing their allotted surface water or groundwater

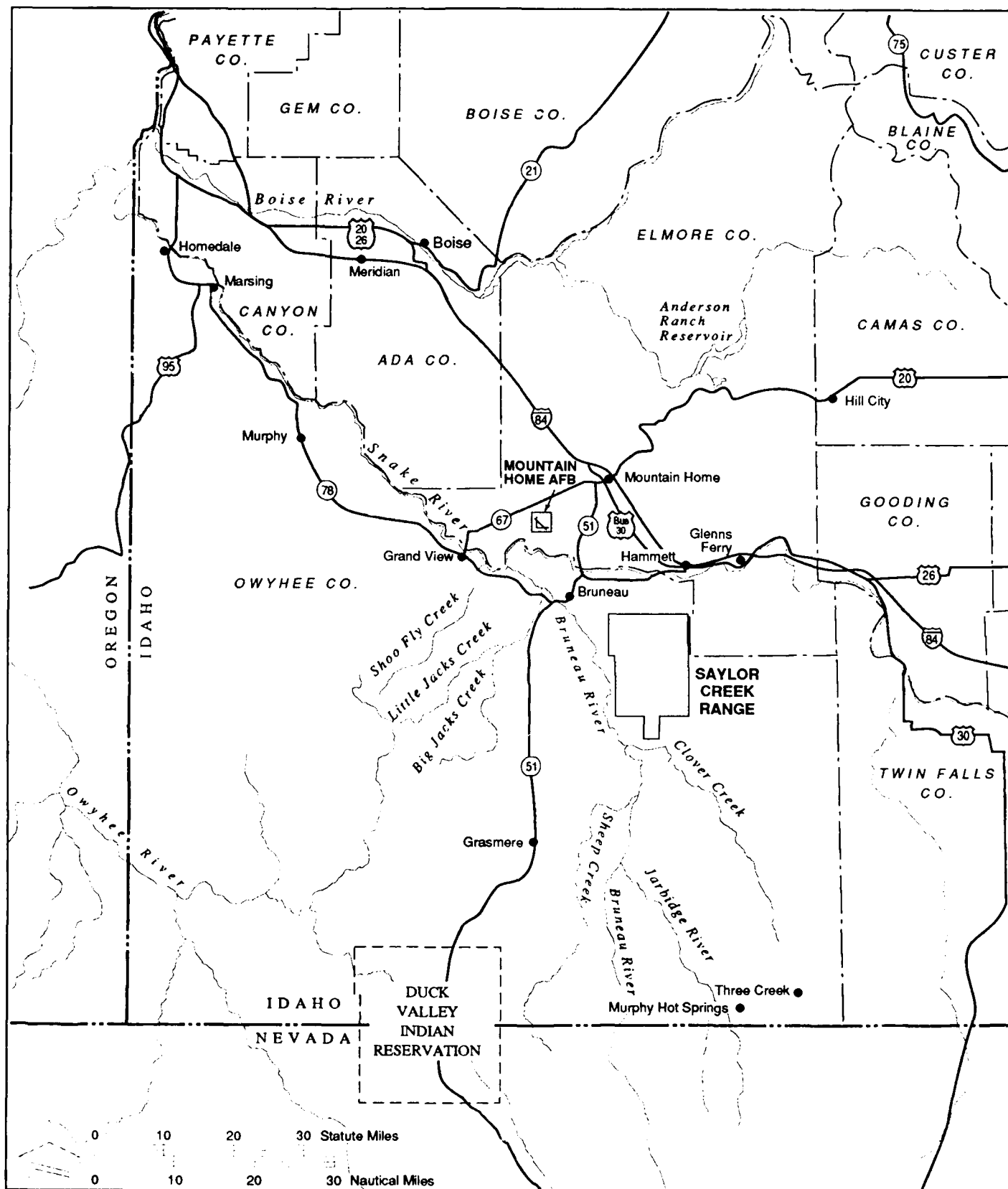
within the ROI. Other proposed land withdrawals in Owyhee County include wilderness study areas, a national park in the Owyhee River canyonlands, and inclusion of portions of the Bruneau and Jarbidge rivers in the Wild and Scenic River system. Combined, these proposed actions would substantially reduce the amount of land available for livestock grazing and would restrict access to current water rights in portions of the ROI. No other potentially significant impacts on water resources have been identified.

6.12 SAFETY

The Idaho Army National Guard Orchard Training Area has withdrawn about 19 acres for ground training maneuvers and artillery practice. While not nearly as vast as withdrawals needed for the proposed expanded range capability, there will be a cumulative impact from both projects. Bombing and strafing by aircraft and impact of artillery will start fires in their respective impact areas. Without proper and sufficient personnel and equipment staged near probable fire start areas, many more wild range fires will be added to the many lightning-caused fires begun each year in this area.

No other known aircraft-related projects or actions would result in any increase to the cumulative mishap potential in the study area.

There are no other identified actions that would result in potential cumulative impacts from hazardous materials use, storage, or treatment at MHAFFB or a proposed expanded range capability area.



**VICINITY MAP OF MOUNTAIN HOME AFB
AND SAYLOR CREEK RANGE**